CENTER FOR NUTRITION POLICY AND PROMOTION

Nutrition Action Themes for the United States

A Report in Response to the International Conference on Nutrition

UNITED STATES DEPARTMENT OF AGRICULTURE
Center for Nutrition Policy and Promotion
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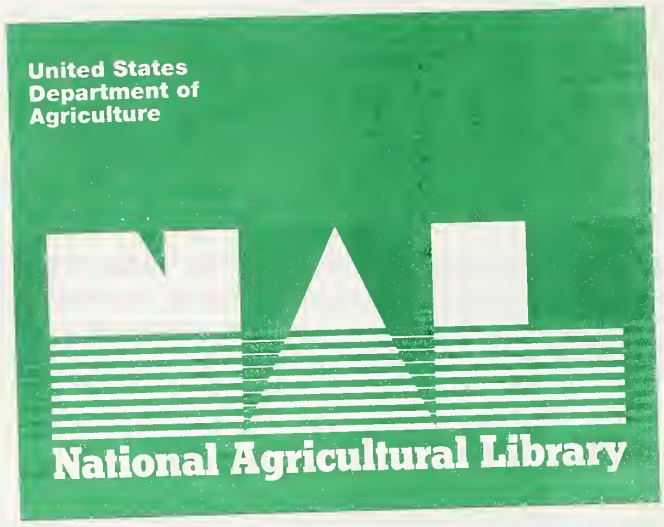

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This repo... ...tion and presents principles and themes to facilitate the improvement of nutrition. The report is divided into two parts. The first focuses on improvement of nutrition within the United States. It describes the current situation in the United States, how nutrition action is achieved, and the country's overall goals for nutrition action. The report describes seven broad strategies that are means to achieve a healthier and more productive society. The second part focuses on international issues and reflects the leadership role of the United States in supporting nutrition programs worldwide.

Keywords: nutrition, food assistance, food safety, breastfeeding, agriculture

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September 1996

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The purpose of this report is to outline principles and themes to facilitate the improvement of the U.S. system of nutrition security (defined below) through the end of the 20th century and into the next century. It was developed by the U.S. Government in collaboration with the private sector and in consideration of oral and written public comments.

The report responds to the commitment made by the 159 participating countries at the 1992 International Conference on Nutrition (ICN) to prepare or improve their national plans of action, as appropriate, based on certain themes enunciated in the *World Declaration and Plan of Action for Nutrition* (FAO/WHO, 1992). These principles and themes include:

1. **Incorporating nutritional objectives, considerations, and components into development policies and programs;**
2. **Improving household food security;**
3. **Protecting consumers through improved food quality and safety;**
4. **Preventing and managing infectious diseases;**
5. **Promoting breastfeeding;**
6. **Caring for the socioeconomically deprived and nutritionally vulnerable;**
7. **Preventing and controlling specific micronutrient deficiencies;**
8. **Promoting appropriate diets and healthy lifestyles; and**
9. **Assessing, analyzing, and monitoring nutrition situations.**

The U.S. nutrition plan outlined in this report corresponds closely with the themes and principles of the ICN.

The nutrition action themes for the United States include two major components. The first component is a domestic plan of action for improving nutrition within the United States referred to as the "Domestic Section." This section describes the current nutrition situation in the United States, sets forth the U.S. goal for nutrition, describes how nutrition action is achieved in the United States, and identifies seven theme areas for improving domestic nutrition. Each of the theme areas is discussed, gaps where potential improvement is possible are cited, and specific strategies are outlined.

The second major component is the "International Section." This section reflects the leadership role of the United States in supporting developing countries' efforts to improve nutritional status.

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Domestic Section

Current Nutrition Situation for the United States

Nutritional Status

There have been major successes in improving the nutritional well-being of our population. The nutrient deficiency diseases that were once prevalent are now almost unknown within our borders. Severe protein-calorie malnutrition is usually limited to cases of child abuse and neglect and debilitating diseases and illnesses.

Less visible forms of malnutrition due to food insecurity and episodic hunger are believed to affect a significant number of families in extreme poverty, especially those with young children; frail elderly persons, homeless individuals, and persons with AIDS also suffer. The associated ill effects of these conditions is currently under scientific study.

The diets of most Americans meet or exceed the Recommended Dietary Allowances (RDA) for many important nutrients, including protein, vitamin C, thiamin, riboflavin, and niacin (NAS, 1989). For some nutrients, average intakes meet the RDA for most age-sex groups and approach the RDA level for others. For a few nutrients, in particular iron and calcium, intakes by some segments of the population are below the RDA level, and there is clinical evidence of deficiency (e.g., iron-deficiency anemia, osteoporosis (partially related to bone loss from low calcium intakes)).

There has been a significant improvement in infant iron nutrition in the past two decades, resulting in the reduction of iron-deficiency anemia among children. Still, based on the latest national survey, 3-4 percent of younger children, and 4-5 percent of nonpregnant women suffer from iron-deficiency anemia. In addition, particularly among low-income pregnant women, poor iron status due to anemia is quite prevalent. These findings indicate the need to continue to enhance the effort to reduce iron deficiency, especially among women.

Limited success has been achieved, however, in addressing nutritional challenges such as overweight and dietary excesses of fat, saturated fat, cholesterol, and sodium that have been linked to chronic diseases such as coronary heart disease and cancer. Overweight has increased dramatically over the past decade and now over one-third of adults, or 50 million people, are overweight (Kuczmarski et al., 1994). Overweight is also increasing in children (Troiano et al., 1995) and adolescents (CDC, 1994). Most people who are overweight are considered obese; thus the rise in obesity in our country has been termed an epidemic (National Task Force on Prevention and Treatment of Obesity, 1993). Modern society has become very sedentary, and diet and sedentary activity patterns have been identified as the second leading actual cause of death in the United States accounting for 14 percent of actual total deaths in 1990 (McGinnis and Foege, 1993).

Although significant progress has been made in reducing blood cholesterol levels, almost one-third (29 percent) of adults still have levels that indicate a need for dietary therapy to lower high blood cholesterol levels (Sempos et al., 1993). Though intake levels of fruits, vegetables, and other foods rich in dietary fiber are on the rise (LSRO, 1995; Tippett et al., 1995), consumption is still considerably below the levels that may help to prevent certain forms of cancer (Block et al., 1992).

Another major nutritional challenge is osteoporosis. Although the exact etiology of osteoporosis is uncertain, a low intake of calcium can contribute to bone loss and the severity of osteoporosis later in life. Calcium intakes by some segments of the U.S. population such as teenage girls and young adult females are inadequate for building strong bones to help delay the onset of osteoporosis later in life in susceptible individuals (NIH, 1994).

Alcoholic beverages are a source of food energy and may displace other sources of nutrients. Excessive alcohol intake may have serious public health and social consequences. Current evidence suggests, however, that moderate drinking is associated with a lower risk for coronary heart disease in some individuals.

In recognition of these factors, the following food components have been designated as current public health issues: Food energy, fat, saturated fat, cholesterol, alcohol, iron, calcium, and sodium (LSRO, 1995). Available evidence links low folic acid intake in very early pregnancy with some neural tube defects in infants; therefore, the U.S. Public Health Service has recognized this vitamin as a public health concern and recommends that all women of childbearing age who are capable of becoming pregnant consume 0.4 mg (not to exceed 1.0 mg total folate) of folic acid per day (CDC, 1992). To meet this goal, the Food and Drug Administration recently issued regulations allowing fortification of grain products with folic acid and health claims on foods high in folate or folic acid (DHHS-FDA, 1995).

Societal Factors

The U.S. perception of a societal melting pot has changed to the recognition that we are a mosaic of populations, and interventions and communication approaches that were designed for a more homogeneous population are being challenged to adapt to this cultural diversification. Also, scientific facts are being discovered at a rapid rate, understanding of human nutrition is steadily evolving, and research findings are often immediately communicated to the public. The food production marketplace is quick to respond, and demand is strong for swift translation of new information into public policy. Strategies proposed later in the report are in keeping with these realizations.

Generally, food from domestic sources and imports is plentiful year-round and relatively inexpensive in the United States. However, there are pockets of populations in rural areas, reservations, and inner cities where long distances, limited access to transportation, and limited resources restrict access to reasonably priced food.

Although the U.S. has a safe food supply, preventable outbreaks of food-related illnesses and up to 9,000 deaths due to microbial pathogens occur each year (Buzby and Roberts, 1996). Recent outbreaks of fatal foodborne and waterborne diseases attest to the need for continued vigilance in food and water safety.

Breastfeeding is the optimal method of feeding almost all newborns and is promoted by Federal policy. However, only slightly more than half of U.S. mothers choose to initiate breastfeeding, and the rate is lower in some subpopulations, especially African-Americans (Ross Laboratories, 1992). Among mothers who did not breastfeed their child in the first 6 months of life, almost all fed their child infant formula, and only a small proportion used cow's milk as a substitute for either breastmilk or formula (Gordon and Nelson, 1995).

Additional detail on the nutrition situation in the United States is available from the Third Report on Nutrition Monitoring (LSRO, 1995). The country paper prepared in 1992 for the International Conference on Nutrition also includes chapters on the nature and dimension of nutrition and diet-related problems in the United States, a description and analysis of factors affecting the nutritional status of the population, and an analysis of policies, programs, and interventions affecting nutritional status.

The next section discusses the overall goal of the U.S. nutrition plan and the programs currently in effect to promote nutrition security in our country.

U.S. Goal for Nutrition

The United States adopts the goal of continued improvement of national nutrition security to achieve a healthier and more productive society. The concept of nutrition security builds upon the term *food security*, which has been defined as access by all people at all times to enough food for an active, healthy life (Anderson, 1990). The concept of food security includes, at a minimum:

(a) The ready availability of nutritionally adequate and safe foods, and

(b) The assured ability to acquire acceptable foods in socially acceptable ways (i.e., without resorting to emergency food supplies, scavenging, stealing, and other coping strategies).

Nutrition security encompasses, in addition to food security, the provision of an environment that encourages and motivates society to make food choices consistent with short- and long-term good health.

WHAT DO WE MEAN BY NUTRITION?

The World Declaration and Plan of Action for Nutrition that was adopted at the International Conference on Nutrition (ICN) took a broad view of nutrition when asking each Nation to develop a domestic plan of action. Taking this broad view from the ICN into the domestic context, nutrition includes:

- Food: Safety, production, processing, distribution, marketing, storage, preparation, labeling, and nutrition security, including food security
- Water supply and quality
- Consumer choice, knowledge, attitudes, and behaviors
- Intervention programs
- Breastfeeding promotion and support
- Monitoring: Surveys, analyses, and modeling
- Research: Basic, applied, and evaluation research in nutrition-relevant areas such as biological/health/disease/performance, economics, education methodology, social/behavioral/marketing, intervention program evaluation, food product and recipe development, food preparation equipment development

How Nutrition Action Is Achieved in the United States

The United States has a long history of commitment to providing nutrition security and enhancing the nutritional well-being of the public through actions by Federal, State and local governments and by nongovernmental organizations including private industry, nonprofit organizations, and religious groups. These efforts form a large and intricate food and nutrition system that is adapted to the wide community variations within our Nation.

Actions at the Federal Level

The U.S. Government's resource investment in nutrition-relevant actions is enormous. Almost $40 billion per year is spent in nutrition assistance intervention programs alone, and many millions more are spent on nutrition education, monitoring, research, and nutrition-related programs. These investments attest to our strong national commitment to nutrition security. They impact on the health of the population, including morbidity and mortality, the cost of health care, food demand, agricultural production, and marketing.

Under the U.S. system of government, national nutrition policy is established by a political process. Federal nutrition commitments appear as legislation established by an elected Congress and President. These laws, enacted with consideration of expressed interest from the public, special interest groups, the executive branch, and often State and local governments, together with departmental regulation authorize or require action by the executive branch of government. National policy is further defined by funds appropriated by Congress for specific programs and by implementing regulations issued by the executive branch. Federal agencies usually issue regulations for public comment that, after revision, are issued as final regulations.

The field of nutrition-relevant actions is broad and involves several departments of the Federal Government, including especially the Departments of Agriculture (USDA), Health and Human Services (DHHS), and the Environmental Protection Agency (EPA). Thus, there are many separate authorizing laws and implementing regulations. The compiled set of these laws compose the legal framework that is a major part of the Federal Government plan of action for nutrition. An annotated listing of some key nutrition-relevant legislation appears in Appendix A. For example, the 1995 Farm Bill Guidance outlines fundamental principles of public policy in relation to food and nutrition (USDA, 1995).

In addition to the governing laws and regulations, Federal policies are delineated in documents adopted by executive departments and agencies and by multisectoral partnerships. The *Dietary Guidelines for Americans* (USDA/DHHS, 1995), developed in 1980 (revised in 1985, 1990, and 1995), serve as the central focus of Federal dietary recommendations. These guidelines, which assure that government agencies "speak with one voice" on nutrition issues, are also used widely by the nongovernment sector. Under the Nutrition Monitoring and Related Research Act enacted in 1990, the *Dietary Guidelines* must be reviewed on the basis of current scientific evidence every 5 years. Revisions to the *Dietary Guidelines* are fundamental to updating the nutrition components of programs such as the National School Lunch and Breakfast Programs. Revised guidelines were issued in January 1996.

Two key tools used to build a healthy diet described by the *Dietary Guidelines* include the Nutrition Facts Label and the *Food Guide Pyramid.* The 1990 Nutrition Labeling and Education Act called for the revamping of food labels by the Food and Drug Administration and USDA to facilitate selection of healthful choices. The USDA/HHS *Food Guide Pyramid* is a graphic representation of the *Dietary Guidelines for Americans* that outlines what to eat each day; moderation, variety, and proportionality are the Pyramid's primary messages.

1995
DIETARY GUIDELINES FOR AMERICANS

Eat a variety of foods

Balance the food you eat with physical activity — maintain or improve your weight

Choose a diet with plenty of grain products, vegetables, and fruits

Choose a diet low in fat, saturated fat, and cholesterol

Choose a diet moderate in sugars

Choose a diet moderate in salt and sodium

If you drink alcoholic beverages, do so in moderation

A key policy document, *Healthy People 2000: National Health Promotion and Disease Prevention Objectives* (DHHS, 1990), was developed by HHS with participation by the Federal Departments of Agriculture, Defense, Education, Interior, Labor, and Transportation, the Environmental Protection Agency, all State health departments, and a consortium of nearly 300 national membership organizations. *Healthy People 2000* establishes 300 objectives in 22 key public health priority areas for achievement in the United States by the end of this decade. Including the 1995 revisions following the midcourse review (DHHS, 1995), 27 of these objectives are nutrition-related, and many others, including those on physical activity, are nutrition-relevant under the broad ICN concept of nutrition. These objectives provide a framework for nutrition actions at local, State, and Federal levels. The *Healthy People 2000* nutrition objectives are listed in Appendix B.

The first *Surgeon General's Report on Nutrition and Health* (DHHS, 1988), which highlighted the overconsumption of certain dietary components (especially fat) as a major public health concern for Americans, is another important policy document. The 1993 Preventive Health Amendments to the Public Health Service Act require biennial reports to Congress on the relationship between nutrition and health. The first report, on dietary fat and health, will be issued by HHS in the near future.

Actions at Other Levels

The multicentric approach to nutrition action that is in effect at the Federal level is mirrored elsewhere in the overall nutrition security system. In fact, although most nutrition programs are federally funded, most planning and implementation of nutrition-relevant programs are actually handled by State and local health and welfare departments and education departments. Within the private sector, many sources (e.g., numerous private organizations, many individual food companies) engage in nutrition-related activities.

This web of government and private actions is not entirely user-friendly to the consumer. Individuals seeking a full range of nutrition services from the government often must find their way through a maze of complex rules and bureaucracies. In our system of free markets and vigorous free media, competition to sell products and be heard often results in a cacophony of confusing messages to the public.

Administering Nutrition Assistance Programs

At the Federal level, accountability and standards are established. States develop plans of operation to carry out these directives. The USDA domestic food assistance programs fund the development of State plans of operations for the various domestic nutrition assistance and nutrition education programs. These plans and their accompanying budgets, which are subject to approval by USDA, serve as the basis for Federal funding of State-administered nutrition assistance and nutrition education activities. The plans also explain how States will provide the services intended by the authorizing legislation and regulations. The State plans and budgets for these programs are updated periodically, depending upon the specific program-planning cycle. This pattern of planning, budgeting, and approval, with periodic updating, often is repeated in State-local relationships and even within the program units of local service agencies. Thus, in the aggregate, the existing format for food assistance programs includes a system of authorization, budgeting, planning, implementation, and cyclical updating.

Various HHS programs provide good assistance to individuals throughout the country. For example, the Administration on Aging (AoA) awards formula grants for congregate and home-delivered nutrition services to 57 State agencies on aging and 228 American Indian Tribes. The State agencies on aging, in turn, award grants to multiple area agencies on aging that contract with local provider agencies for service provision. Services include congregate and home-delivered meals, and nutrition education. Although the meals are available to all persons 60 years or older, local provider agencies target those with greatest economic and/or social need.

National Nutrition Monitoring

Monitoring the nutritional status of the U.S. population is an important part of evaluating our nutrition security. Although nutrition monitoring activities date back to the 1800's with food composition research at USDA, both HHS and USDA presently have the lead responsibility for monitoring. The food supply elements of the National Nutrition Monitoring System began in 1909. Food consumption surveys have been ongoing since the 1930's, and nutrition monitoring on a national basis began in the 1960's. Systematic coordination of the various components began in the 1980's with the establishment and the implementation of the National Nutrition Monitoring System. These actions have led to closer coordination among the components of the system and to periodic reports to Congress on the nutritional status of the population.

The National Nutrition Monitoring and Related Research Act of 1990 outlined a number of requirements for nutrition monitoring and research. These requirements serve as the basis for planning and coordinating the activities of 21 Federal agencies that either conduct nutrition monitoring surveys and surveillance activities or are major users of nutrition monitoring data.

Partnerships for Nutrition Actions

The partnership approach to improving nutrition security is used increasingly by the public and private sectors for increasing effectiveness and stretching scarce resources. For example:

- Along with the debut of the nutrition facts label, a major education campaign—the National Exchange for Food Labeling Education (NEFLE)—was implemented to help consumers use the new label in planning a healthy diet. The Federal Government and other public and private-sector groups worked together to educate consumers on the biggest changes in food labeling in two decades. These groups produced educational materials, conducted research, and planned media activities—all in an effort to help consumers get the most from the label. HHS and USDA headed the campaign.
- The Association of State and Territorial Public Health Nutrition Directors (ASTPHND) has prepared a "National Action Plan to Improve the American Diet: A Public/Private Partnership," which combined marketing, education, and policy approaches to action (Trumpfheller, Foerster, and Palombo, 1993).
- USDA's "Team Nutrition," launched in 1995, includes over 200 public and private partners in an effort to improve the health and education of children by creating innovative partnerships that promote food choices for a healthful diet through the media, schools, families, and the community.
- Former Surgeon General C. Everett Koop's "Shape Up America!" campaign is a national nutrition and physical activity campaign through which government leaders, the medical community, educators, community groups, and industry are working together to "shape up" men, women, and children. The initiative aims to alert Americans to the dangers of overweight and inactivity and tries to motivate them to take action through heightened public awareness and extensive education.
- The Dietary Guidelines Alliance is a new partnership of food industry, health organizations, and nutrition professional societies, with liaison representatives from government who have joined together around the new *Dietary Guidelines for Americans* to develop consumer-friendly messages consistent with the *Guidelines.*

Themes for Improving Nutrition

Seven priority areas for improving nutrition in the United States are presented here as Nutrition Action Themes for the United States:

1. **Eating for Health**
2. **Nutrition Security for All**
3. **Safe Food and Water from Source to Table**
4. **Nutrition Monitoring**
5. **Promoting Breastfeeding**
6. **Nutrition-Sensitive Food Production, Economic Policy, and Agricultural Research**
7. **Human Nutrition Research**

The following sections review the current status in each theme area, identify some major gaps that need to be addressed, and present strategies for addressing these gaps.

1. Eating for Health

Background

"For the two out of three adult Americans who do not smoke and do not drink excessively, one personal choice seems to influence long-term health prospects more than any other, what we eat." (DHHS, 1988).

Most adults express some concern about the link between the food they eat and their health (The Gallup Organization, 1994). This challenge, in part, has been translated into fewer heart disease-related deaths (DHHS, 1988), lower blood cholesterol levels (Johnson et al., 1993), and a decrease in the prevalence of hypertension (Burt et al., 1995). Americans are consuming less fat as as a percentage of calories, less saturated fat and cholesterol, and more grain products (USDA, 1996; McDowell et al., 1994).

Still, current nutrition monitoring data indicate that the public needs to engage in considerable dietary and activity pattern changes (LSRO, 1995). The continuous introduction of new products into the food supply, an increase in the amounts of food eaten away from home, and strategic food advertising and marketing campaigns lead many individuals to select diets that are too high in fat, saturated fat, cholesterol, and sodium and too low in fruits, vegetables, whole grains, fiber, and overall variety (LSRO, 1995). In addition, there has been a positive, but not striking, improvement in the number of adults who exercise, but no decline in the proportion of people who lead essentially sedentary lives; children, too, are engaging in suboptimal levels of physical activity in schools (DHHS, 1995).

Federal Actions to Promote Eating for Health

Federal activities to promote healthy eating need to be coordinated with State, local, and private efforts to have the most impact on the behavior of the American public.

The *Dietary Guidelines for Americans* (see box on page 4), which represent Federal policy on healthful eating advice to the public, are based upon the preponderance of scientific and medical evidence at the time they are published. The *Guidelines* recognize that food is eaten for enjoyment, and food choices depend on history, culture, and the environment. People also make choices based on taste, cost, and convenience, among other reasons.

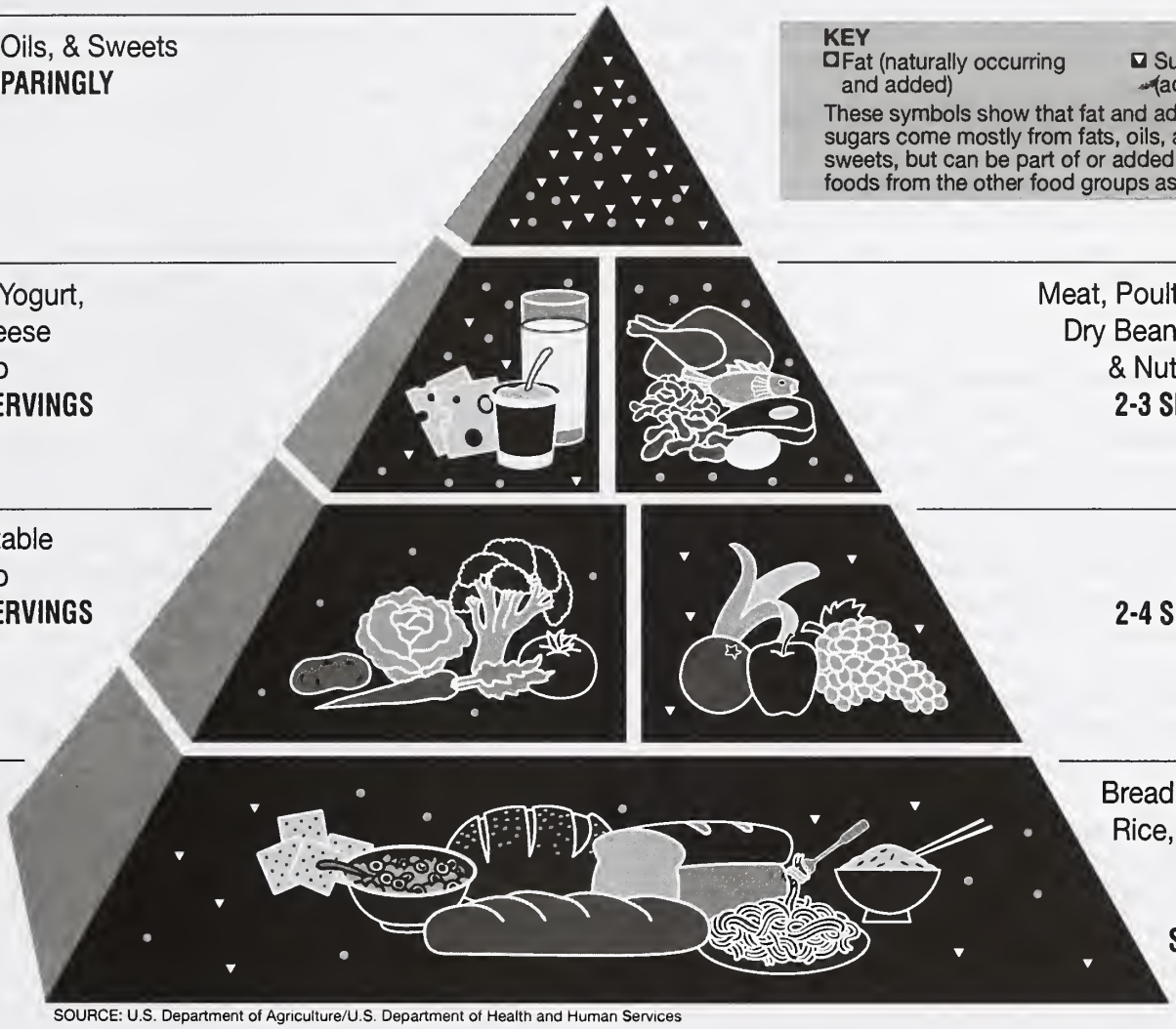
The text that accompanies the first of these seven general guidelines (i.e., "Eat a variety of foods") recommends that individuals eat from a variety of food groups, which is consistent with advice given in the *Recommended Dietary Allowances* (RDA) (NAS, 1989). The dietary pattern recommended for Americans includes foods from the five major food groups, graphically illustrated in the USDA/DHHS *Food Guide Pyramid* (see page 9) (USDA/DHHS, 1992), combined in multiple ways to reflect diverse personal and cultural preferences. However, studies show that many people do not follow the recommended dietary pattern (LSRO, 1995).

The text in the second guideline recommends maintaining or improving body weight by balancing food intake with physical activity and suggests that all individuals ages 2 years and older should engage in moderate-intensity physical activity for 30 minutes on most, if not all, days of the week. Studies show, however, that the prevalence of overweight in the United States has increased by 8 percentage points over the past decade (Kuczmarski et al., 1994). Nationally, 31 percent of men and 35 percent of women are overweight, and more than 45 percent of non-Hispanic Black and Mexican-American women are overweight. Twenty-one percent of adolescents age 12-19 years are overweight, an increase of 6 percent over the last decade (CDC, 1994) and the prevalence of overweight for children ages 6-11 is approximately 22 percent, which represents a 7-percentage point increase in the last 10 years (Troiano et al., 1995). A national study of school children found that the average caloric intake on school days was 11 percent above the level suggested in the RDAs (Devaney, Gordon, and Burghardt, 1993). In addition, while adults are engaging in more moderate levels of physical activity, they do not seem to be reducing their levels of inactivity. Also, the number of children participating in physical activity in schools is decreasing (DHHS, 1995).

The third dietary guideline suggests choosing a diet with plenty of plant-based foods—grain products, vegetables, and fruits—as the foundation of meals. Such diets are associated with a lower risk for a number of chronic diseases, including certain types of cancers (USDA/DHHS, 1995). Americans have increased their consumption of grain products in the last 20 years (USDA, 1996). Yet, less than a third of the population consumes at least five servings per day of fruits and vegetables. Also, the majority of the population consumes less than one serving of fruit per day. Among adolescents, french fries are a major contributor to vegetable intake (Krebs-Smith et al., 1995).

Food Guide Pyramid

A Guide to Daily Food Choices



SOURCE: U.S. Department of Agriculture/U.S. Department of Health and Human Services

Use the Food Guide Pyramid to help you eat better every day. . .the Dietary Guidelines way. Start with plenty of Breads, Cereals, Rice, and Pasta; Vegetables; and Fruits. Add two to three servings from the Milk group and two to three servings from the Meat group.

Each of these food groups provides some, but not all, of the nutrients you need. No one food group is more important than another — for good health you need them all. Go easy on fats, oils, and sweets, the foods in the small tip of the Pyramid.

To order a copy of "The Food Guide Pyramid" booklet, send a $1.00 check or money order made out to the Superintendent of Documents to: Consumer Information Center, Department 159-Y, Pueblo, Colorado 81009.

U.S. Department of Agriculture, Human Nutrition Information Service, August 1992, Leaflet No. 572

The text in the fourth guideline recommends that all healthy persons age 2 years and older limit their total fat intake to 30 percent or less of total calories and their saturated fat intake to less than 10 percent of total calories. Children should gradually reach the guideline by about 5 years of age. The most recent food consumption surveys indicate that, on the average, people age 2 and older consume about 34 percent of total calories from fat and about 12 percent of total calories from saturated fat (USDA, unpublished data; McDowell et al., 1994). Expressed another way, *Healthy People 2000* midcourse review data indicate that only 22 percent achieve the dietary goal for total fat and only 21 percent for saturated fat (DHHS, 1995).

Numerous public and private efforts are underway to influence the eating habits of consumers. For example, since 1985, through the National Cholesterol Education Program (NCEP), numerous organizations have been targeting both health professionals and the public with the message that a diet low in saturated fat, total fat, and cholesterol is essential to lowering blood cholesterol levels. The "5 a Day —For Better Health" campaign encourages all Americans to eat five or more servings of fruits and vegetables a day. Related to another area of the *Dietary Guidelines*, the National High Blood Pressure Education Program encourages Americans to maintain healthy weight and to decrease salt and sodium consumption to help lower blood pressure.

The Nutrition Facts Label is designed to help consumers select foods that will meet the *Dietary Guidelines for Americans*. Most processed foods now carry nutrition information. Labels are voluntary for many raw foods, and information can be obtained for most commonly consumed fish, meat, poultry, and raw fruits and vegetables. Labels show how each food fits into an overall healthy diet, nutrient by nutrient. In addition, they provide authorized nutrient content claims as well as health claims about certain diet/disease relationship, while meeting requirements that prevent label information that would be false or misleading.

The new food label provides consumers with point-of-purchase nutrition information on most foods about components of particular health concern, including calories, total fat, saturated fat, cholesterol, and dietary fiber. Health claims and nutrient descriptors such as "low fat" are closely regulated by the FDA and USDA to assure the integrity of information presented to consumers on food labels. Labeling offers assistance to educate consumers about the use and importance of the new information.

These and many other efforts seek to increase consumers' knowledge and motivation, thereby influencing their purchasing and eating behaviors. Americans, however, are eating more and more of their food away from home where healthful choices may be limited and information to help make healthier selections is not available. Recent survey data indicate that almost three-quarters (72 percent) of individuals eat one or more meals a day away from home (USDA, unpublished data), up from about 62 percent a decade or so earlier (USDA, 1984). This places added emphasis on the need to enhance nutrition knowledge and motivate consumers and creates additional challenges for nutrition promotion efforts.

Eating for Health: Gaps

The public comments solicited for this report, together with information gathered from nutrition monitoring of dietary intake, weight status, and the prevalence of nutrition-related chronic diseases, indicate the need to substantially improve efforts to promote healthful eating and increased physical activity by all Americans. The following critical gaps have been identified for consideration in developing action strategies in this area:

- The number of partnerships and multisectoral activities that promote healthful diets and lifestyles to reduce health risks of disease states needs to be increased by the various levels of government and the private sector, including industry, academia, and nongovernmental organizations and long-term commitments need to be provided.

- Nutrition assistance, service delivery programs, and health care programs need to ensure that their nutrition and, if applicable, physical activity components are in keeping with current scientific consensus and government policy, as embodied in the *Dietary Guidelines for Americans* and with public health concerns identified by nutrition monitoring reports. They also need to better prepare for ongoing and future changes, including shifts in demographic trends, changing roles of men and women, changing norms of eating patterns (such as frequency and location), an increasing pace of demand for available nutrition information, and the necessity for frequent revision of materials to keep consumer information up-to-date. In addition, programs need to consider factors other than health (taste, cost, and convenience, for example) that influence a consumer's eating patterns.
- Intervention efforts need to make use of state-of-the-art methods to achieve behavioral change, including customer-oriented marketing techniques and new technologies.
- Interventions that have been shown to be effective and efficient in small scale studies and demonstrations need to be expanded in geographic scope and population coverage.
- Nutrition education approaches need to be regularly reviewed, updated, and tailored for specific age, income, culture, and reading levels and for special populations such as people with limited literacy skills and non-English speaking populations.
- Comprehensive nutrition and physical education and activity programs are needed to help children learn to make appropriate choices for a healthful diet and develop healthy food and physical activity habits during formative years.
- Consumer preference for increased food choices for a healthful diet needs to be strengthened and encouraged to where market demand for such choices is evident and serving these choices is profitable for food away from home providers such as restaurants, food service, and vending machine operators.
- Research is needed that focuses on interventions affecting desired behavioral changes and on methods for evaluating behavioral change.

Some strategies are recommended in the following section to address these gaps and help move the Nation forward to more healthful eating and activity habits.

Eating for Health: Strategies

1.1 ***Regularly update nutrition and, wherever appropriate, physical activity standards of established programs.*** Nutrition assistance and nutrition service delivery programs should be updated, as needed, to include a strong nutrition and physical activity component promoting healthful eating and exercise consistent with the *Dietary Guidelines for Americans.* Programs such as the School Meals Initiative for Healthy Children, which fully utilize and promote the educational tools available to convey concepts of the *Dietary Guidelines* including the Nutrition Facts Label and the *Food Guide Pyramid*, can serve as models for change. Centralized functions such as commodity purchasing should be conducted in a nutrition-sensitive manner, such as school food purchasing as influenced by the Commodity Improvement Council. Through training and technical assistance by qualified professionals, the knowledge and skills of the staffs in the food, nutrition, and health arena should be upgraded and maintained at the levels needed for effective nutrition intervention, management, and delivery. Training and subsequent promotion activities should take into account non-nutrition related factors that influence food choices.

The planning cycles of nutrition intervention programs should include regular updates of benchmark studies and reviews that serve as the foundation for planning.

1.2 ***Build multisectoral partnerships and commitment.*** The effort to improve message consistency about food, physical activity, and health behaviors will require cooperative efforts by the various levels of government and the private sector, including industry, academia, and nongovernmental organizations. Public-private partnerships, such as the 5 a Day, the food labeling education campaigns, Dietary Guidelines Alliance, and Team Nutrition should be increased and expanded for maximum effectiveness in efforts to inform the public about dietary recommendations and their implementation.

Support should be given to the formation of State and local nutrition support networks as focal points for public-private partnerships. Government co-sponsored demonstration projects supporting State and local nutrition networks should serve as models for targeted nutrition education and promotion partnerships. Models include the FCS-sponsored Community Nutrition Education Cooperative Agreements, NET, and Food Stamp 50/50 grants. These three efforts

involve other Federal programs, such as EFNEP as well as other community members, to form partnerships or consortia. The various partnerships should work with commercial food and institutional services to provide healthful eating choices, and the members of partnerships should serve as role models by providing food choices for a healthful diet in their catering services and work sites. Public-private partnerships can be effective, and legislative and bureaucratic barriers to such efforts should be minimized.

In addition, well-known and respected Federal, National, and State programs may serve to stimulate "buy in" by local groups and individuals. Over time, programs that are highly regarded have been adopted without the need to create partnerships or enforce mandates.

1.3 ***Use state-of-the-art methods and technologies.***
To compete for attention, credibility, and followers, it is necessary to make the best use of existing and emerging methods and technologies, provide rewards as an added incentive for such usage, and showcase the achievements from these efforts. For service providers and their partners, computer and telecommunications technology should be explored and developed. Toll-free lines and other new technologies should be used to provide health professionals and consumers with access to nutrition information, with special attention to improving communications with low-literacy, low-income, non-English-speaking, and very-high-risk populations.

Effective marketing techniques used by private industry should be adapted to promote eating for health to the public. For example, a national multimedia campaign could be promoted to motivate dietary improvement, in part, through use of the new food label or the *Food Guide Pyramid.*

1.4 ***Expand proven interventions to fully reach the target groups.***
Many eating-for-health promotion activities that have been demonstrated to be successful in certain States or localities have not been expanded to apply to broader populations. Government, in consultation with the private sector, should establish a mechanism to regularly review the full scope of all eating-for-health interventions and intervention research models (including pilot projects and demonstrations) and the population coverage of these projects. A consensus should be developed on which projects merit expansion to the entire population or to specific subpopulations. Once consensus is reached on which activities merit expansion, the partnerships described above should be instrumental in helping to adapt and expand some of these activities to their own communities.

1.5 ***Improve/expand nutrition education approaches.***
Existing educational approaches are not always suitable for specific age, income, culture, and reading levels. Projects such as the *Dietary Guidelines for Americans* and the *Food Guide Pyramid* may need adaptation to be sensitive to the language and cultural needs of various ethnic and racial groups in order to reach the entire population.

Low literacy and culturally determined beliefs and attitudes can present challenges to designing interventions that are culturally sensitive but effective at producing necessary dietary and behavior changes. Organizations should appropriately tailor educational approaches that translate guidelines for eating into practical tips for shopping and preparing and eating foods that contribute to diets with more vegetables, fruits, and grains and less total fat, saturated fat, cholesterol, and calories. Such efforts should be monitored and the programs and materials evaluated and, if needed, modified on an ongoing basis. The American Dietetic Association's National Nutrition Month initiative, for example, has been in existence for almost 20 years and represents a successful consumer nutrition education program.

The Government, private sector, and academic institutions need to maximize the sharing of information. Increased sharing of information about nutrition interventions, pilot implementation and findings, research and evaluation results, and available educational materials and their formative research will expand effective approaches in a cost-effective manner. The Food and Nutrition Information Center (FNIC) of the National Agricultural Library is currently a repository for materials developed through USDA programs and could expand its data base to include information on nutrition interventions and research. In addition, both HHS and USDA make information available through agency clearinghouses and, more recently, over the Internet.

1.6 ***Improve school nutrition and physical education and nutrition monitoring of school children.***
Nutrition instruction should be required for teacher and food service personnel education and in-service training. Team Nutrition school partnerships and activities should be supported throughout the Nation. Nutrition education for

school children provided through the Nation's 4-H Clubs should also be encouraged. The legislatively mandated Nutrition Education and Training Program (NET) should be used to facilitate coordination of nutrition education activities in schools and child care institutions. The "Guidelines for Nutrition Education in Comprehensive School Health Programs" will soon be issued by the Centers for Disease Control and Prevention. These Guidelines should be promoted among State and local education agencies as national guidelines that incorporate nutrition into school physical activity and health education, taught by qualified professionals. Also, a school-based monitoring system should be developed to assess the dietary habits and nutritional status of school children at the local level and to assist in updating programs that improve eating behaviors.

1.7 ***Increase the availability of food choices for a healthful diet in all types of commercial food service operations.*** Some major strides have been made by food service operators to provide menu choices that can help individuals build healthful diets. Public-private partnerships involving commercial food service operations, including restaurants and institutions, need to continue to provide choices consistent with the *Dietary Guidelines* and should assist consumers in identifying these selections. Guidance to make healthful food selections away from home (i.e., restaurants, school cafeterias, vending machines, quick-stop grocery marts) should be incorporated into Federal and other nutrition education programs.

1.8 ***Improve policy action through research and evaluation.*** Further advancements in eating for health require ongoing research on consumer behavior that focuses, especially, on more effective interventions to achieve desired behavioral changes and on more efficient methods to evaluate behavioral change intervention. Research in this area should help:

- Provide information on, and understanding of, empowering individuals, especially children and their caretakers, to make food choices that reflect the *Dietary Guidelines for Americans.*
- Evaluate multifaceted nutrition education programs aimed at improving children's diets, and evaluate "change driven" programs that support school food service personnel in using the *Dietary Guidelines for Americans.*
- Evaluate the acceptability of meals that taste good and meet the *Dietary Guidelines.*
- Evaluate the effectiveness of public-private partnerships in reaching children to promote food choices for a healthful diet.
- Evaluate the effectiveness of age-appropriate messages delivered to children in a language they speak on media they use, in ways that are entertaining and actively involve them in learning.
- Develop effective coping strategies for individuals who are not able to plan, focus, set realistic goals, monitor dietary intake, affect change, and participate in physical activity and thus are less likely to be successful at long-term behavior change.
- Develop effective strategies for improving the dietary habits of minority groups who have varied cultural preferences, many of whom are at increased risk of overweight, heart disease, and other chronic diseases.
- Improve methods for developing effective positive nutrition messages on eating for health.
- Evaluate effects of healthier diets and increased physical activity on children's growth and cognitive development and on their health status and cognitive ability as adults.
- Evaluate cost savings that could accrue from achievable behavioral change in eating habits and activity patterns and from access to food and nutrition services by all people at nutritional risk.

2. Nutrition Security for All

Background

Nutrition security, as discussed in the introduction, is defined as access by all people at all times to enough food for an active, healthy life, and the provision of an environment that encourages and motivates society to make nutrition choices consistent with short- and long-term good health. The United States has a plentiful supply of safe and nutritious food. Through a combination of domestic production and global sourcing, the U.S. food markets include a wide variety of foods year round. Food security problems in the United States are most often related to income poverty, which is compounded by limited access to reasonably priced stores, lack of transportation and distribution, and, for some, factors such as hopelessness, poor facilities for home cooking and food storage, and limited skills and knowledge in food preparation and home economics.

As we continue to provide a safety net against hunger and starvation, there is a growing consensus that we must move away from food assistance as income support to food assistance as nutrition security. The School Meals Initiative for Healthy Children and the integration of nutrition into the Food Stamp Program are improvements that benefit the low-income population by reducing their already high risk of chronic disease. (While welfare reform could have major impact on nutrition security in the United States, it is an active policy issue that is beyond the scope of this plan of action for nutrition.)

Though consensus on the domestic definition of food security has only recently emerged, our Nation has a long-standing record of action to prevent what is more commonly referred to as hunger. About one in six Americans will receive Federal food assistance at some point during a year, and the annual Federal food assistance budget now exceeds $40 billion for programs including the Food Stamp Program, the National School Lunch and School Breakfast Programs, the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), and the Child and Adult Care Food Program. In addition to these programs, a large network of community organizations, private establishments, and religious groups provide additional assistance through services such as food banks, emergency food pantries, and soup kitchens.[1]

[1]Soup kitchens are emergency food providers that serve food ready for human consumption without additional preparation.

Despite these efforts, community service providers are often confronted with people who are food insecure and families who have experienced hunger. National studies have found that 2 to 4 percent of American households report that they sometimes or often do not have enough food, indicating that 5 to 10 million individuals live in households that report food insufficiency. Low-income households are at greater risk, with about 10 to 16 percent of those with income below 131 percent of poverty[2] reporting such food insufficiency (USDA/HNIS and DHHS/NCHS, 1994).

Private foundations and nongovernmental groups have worked with communities to study food insecurity locally among families with children in the Community Childhood Hunger Identification Project (CCHIP). These studies reported that 19 percent of families with incomes below 185 percent of the poverty level and children under the age of 12 years experience at least five of eight indicators of hunger at some point during a year. FRAC/CCHIP estimated 4 million young children experience hunger at some point during the year (Food Research and Action Center, 1995). The Urban Institute found that 1.5 million elderly Americans report at least one of four food insecurity indicators in the previous 6 months (Cohen, Burt, and Schulte, 1993).

National surveys typically exclude at least one group believed to be at great risk of food insecurity; those who receive food from emergency food providers. A study sponsored by a major nongovernmental food banking organization, Second Harvest, found that in 1993, 10.4 percent of the U.S. population visited an emergency food provider at least once (Second Harvest, 1995).

In April 1995, a major national survey of food insecurity and hunger was conducted by the Bureau of the Census as a supplement to the Current Population Survey. Sponsored by the USDA Food and Consumer Service and developed in a collaborative, consensus-building undertaking among a large, diverse group of academics, private-sector experts, Federal Government representatives and others, this 58-item instrument represents a major advance in determining the prevalence of poverty-linked food insecurity and hunger in the U.S. population.

[2]For a family of four, includes annual income up to $19,683.

Nutrition Security for All: Gaps

In addition to survey information on food insecurity, many public comments have described food security problems. Seven critical gaps that need to be addressed have been identified for consideration in developing key strategies for this area. These are:

- Consensus on the definition and survey measures of food security have been achieved only recently. The method to produce a consistent analytical measure for food insecurity prevalence and hunger needs to be agreed upon. More data using measurement and analysis methods of scientific consensus need to be collected so change can be monitored, including data at the community level.
- Current Federal efforts to promote food security may not make the best use of local community creativeness and may not implement action tailored to the needs of the community.
- Significantly less than all eligible individuals participate in the food assistance programs; for example, in January 1992, 26 percent of those eligible for the Food Stamp Program did not participate.
- Not all people have access to nutritious and culturally appropriate foods through normal channels of trade. Food priced at or below the national average is not routinely available to low-income consumers in some economically depressed areas, both urban and rural.
- Although research shows training to be effective, some low-income households do not have the knowledge and skills needed to purchase and prepare safe, economical, and nutritious diets, and they do not have access to such training.
- Current referral and service delivery systems that could link food-insecure individuals with food assistance services for which they are eligible do not make the best use of available telecommunications, computers, and other technologies.
- The impact of welfare reform (as it emerges from the political process) on the food security of low-income households is unknown and may require concurrent adjustments in some food assistance programs. Given the importance of timely information to inform public policy and allow preventive action, research is needed to develop methods that can rapidly assess the degree of individual, household, and community food insecurity.

Nutrition Security for All: Strategies

To address these national gaps and move the Nation forward on achieving **nutrition** security for all, the following strategies are recommended.

2.1 ***Access to nutrition assistance programs for all eligibles.***
National, State, and local efforts should be undertaken to ensure that nutrition assistance programs are available to those in need of them. Part of this is to increase awareness of these programs among those who are at risk of needing them at some time in their lives.

2.2 ***Integrate nutrition and nutrition promotion into all food assistance programs.***
As stated earlier, food assistance and nutrition promotion must be part of the provision of nutrition security. This will ensure that low-income program participants will receive guidance for healthy eating along with their food benefits.

2.3 ***Measure nutrition security.***
The development of a standardized mechanism, instrument, and methodology for assessing the prevalence of various degrees of "food insecurity" that can be used across Federal agencies and at the State and local level should be completed. Widespread periodic assessment denoting the prevalence, degrees, and duration of food insecurity at the Federal, State, and local levels ought to be catalyzed. Distribution of the findings and use of information in decisionmaking should be facilitated. Additional work needs to be done on combining food security measures with measures of the U.S. social environment's encouragement of healthy eating.

2.4 ***Foster community efforts to improve food security.***
Community capacity to identify and address food security issues can be improved and increased through the use of public-private partnerships, seed money, and project recognition awards to promote development of and action by local multisectoral community food security councils. Community awareness of food insecurity and potential intervention strategies should be raised. Available telecommunications technology and public-private partnerships can foster rapid free exchange of information on food security issues among all parties (local communities, States, the Federal Government, academia, advocates, the private sector, etc.)

2.5 ***Increase access to food.***
Seed money and public-private and public-public partnerships can develop sustainable community activities that promote food security. Access by food insecure groups to competitively priced, culturally appropriate, nutritious food choices through normal channels of trade should be increased. Other resources that increase purchasing power, such as public buses rerouted past major supermarkets, can be made accessible.

2.6 ***Increase food security skills.***
Education and training on food security skills as an integral component of parenting, schooling, food assistance, and nutrition education efforts should be increased. This should be offered at appropriate life stages as a part of efforts to promote health and well-being.

2.7 ***Use modern technology.***
Existing and emerging technologies can improve community service to individuals and families experiencing food insecurity; for example, a nationwide toll-free number for routing food assistance referrals may be implemented.

2.8 ***Improve policy and action through research.***
The ability to assess the degree of individual, household, and community food insecurity should be developed. Efforts to reduce food insecurity can be enhanced by research in the following areas:

- The short- and long-term effects of various degrees of food insecurity on different population subgroups starting with groups at high risk of health and development problems.
- The cost-effectiveness of education, motivational, and social-marketing programs to improve food insecurity of varying degrees compared with food assistance interventions.
- Consumer research among those experiencing food insecurity to find out how to improve service delivery.
- Evaluation of the impact of major structural reforms such as welfare and health care on food security.

3. Safe Food and Water From Source to Table

Background

Safe and adequate food and water supplies are essential for good health and nutrition. The Federal, State, and local governments and the food industry work together to provide safe and abundant food and water supplies. As a result, food and drinking water in the United States are safe for human consumption. Yet, despite advances in technology, public health problems such as foodborne disease and drinking water contamination occasionally do occur.

Foodborne or waterborne illness can occur through microbial or chemical contamination of food or water. These illnesses pose a major public health concern in the United States. For example, it is estimated that 30 to 35 percent of 99 million acute cases of intestinal infectious disease that occur each year in the United States are caused by microbial contamination of foods, resulting in 83,000 hospitalizations, over $3 billion in hospitalization costs, and from 500 to 9,000 deaths each year (Buzby and Roberts, 1996; CAST, 1994).

Unlike other areas of nutrition action in which strategies focus primarily on consumer choices and social support systems, food and water safety rely heavily on laws, regulations, monitoring, investigation, and when needed, sanctions. Strong protection in these areas is essential to ensure public safety. Consumers' safe food handling, preparation, and home storage are also important and must be addressed to increase food safety.

Federal Actions to Promote Food and Water Safety

At the Federal level, USDA, FDA, and the Environmental Protection Agency (EPA) are primarily responsible for ensuring the safety of food and water supplies. Many Federal programs are in effect to address food and water safety, and improvements are actively sought by these agencies.

The U.S. Government has developed a number of strategies to improve food and drinking water safety, including USDA's Pathogen Reduction Program that focuses on the prevention and reduction of microbial pathogens in food production. The program includes activities that study the relationships among pathogens in animals on the farm, changes occurring in the pathogen profile in animals during transit, and changes occurring in the slaughter house.

At the retail level of food protection, FDA assists the States and their political subdivisions in their responsibilities for licensing and inspecting the safety of retail food establishments. FDA has developed and offered to all levels of government a Model Food Code designed to promote uniformity in the regulation of retail food stores, food service operations, and food vending operations (FDA, 1993). FDA also directly regulates the safety of food service in conjunction with interstate travel conveyances, including buses, trains, planes, and vessels.

Through yet another Federal initiative to promote food and water safety, in December 1994, EPA, USDA, and FDA jointly announced the formation of a voluntary partnership, formally known as "The Pesticide Environmental Stewardship Program (PESP)." Through this partnership, the Federal Government intends to promote Integrated Pest Management (IPM) technologies that will develop site and crop-specific pesticide use/risk-reduction strategies. This program seeks to enroll 75 percent of U.S. agricultural acreage in IPM risk-reduction strategies by the year 2000.

EPA's Use/Reduction Initiative includes a commitment to reduce the use of higher risk pesticides nationwide. The initiative is designed to use regulatory and nonregulatory incentives that encourage the development and use of environmentally acceptable biological and reduced-risk pesticides as alternatives to more toxic and persistent conventional pesticides.

The U.S. Government protects the safety of the domestic food supply in several other ways, including the regulation of food additives, pesticides, manufacturing processes, food labeling, and meat, poultry, and seafood inspection, as well as in-plant inspection and enforcement actions. The Government regulates products offered by foreign firms and countries for import to the United States.

Although consumers may perceive veterinary drug, pesticide, and environmental chemical residues in foods to pose a significant public health risk, there are no documented instances demonstrating that residues occurring within the limits established—by the EPA for pesticides and by the FDA for animal drugs and environmental chemicals—are harmful to the public. Consumers are protected from illegal residues of animal drugs and other chemicals through a rigorous premarket approval process. Also, a national residue monitoring and enforcement program collects

samples of food shipments and takes enforcement actions against foods found to contain illegal residues. Grade A milk, for example, is required to be tested at the processing plants for illegal residues. In addition, research is ongoing to improve analytical methods to identify and quantify contaminants in foods and to assess risk of adverse health consequences from exposure to hazardous substances in foods.

As an improved means to identify and prevent food safety problems in processing, the United States is actively championing the food industry-wide use of the Hazard Analysis and Critical Control Point (HACCP) system. This system shifts from the traditional end-point testing for monitoring food safety to a prevention system that calls for a science-based analysis of potential hazards and a determination of the critical points where the hazards can be prevented, eliminated, or reduced to acceptable levels during food production and processing. (NACMCF, 1992; USDA, 1995)

Food irradiation has been advocated as a promising technology for enhancing the safety and quality of the food supply by controlling pathogens in foods and is endorsed by the World Health Organization, the American Dietetic Association, and the American Medical Association. FDA has found its use to control pathogens in poultry to be safe, and USDA has authorized its use in poultry processing. FDA is currently reviewing the safety of irradiation of red meats.

USDA's post-harvest management and grading program facilitates the interstate and foreign commerce of food by inspecting, identifying, and certifying the quality of commodity products in accordance with official standards. Additionally, the programs facilitate the movement of products through marketing channels and serve as a basis for pricing.

Because consumer behavior is an important factor in food safety, the U.S. Government has intensified efforts to educate consumers about the safe handling and cooking procedures for raw meat and poultry. USDA has mandated safe handling instructions on every package of fresh meat and poultry. In addition, hotlines are operated by USDA and FDA to answer consumer questions about meat, poultry, and seafood. Government agencies are also working with State and local officials to increase awareness of proper sanitation and food handling practices among food preparers.

Safe Food and Water from Source to Table: Gaps

To improve the safety of food and water, the following gaps have been identified:

- More food processing operations need to use modern, proven effective systems to prevent food contamination.
- Legal requirements and enforcement for safe handling in food production and post-harvest need to keep pace with changes in preparation and marketing.
- Some public water systems need to be upgraded to better protect consumers from certain pathogens and contaminants of public health significance.
- Diagnosis and reporting of foodborne and waterborne illnesses need to be improved. Consumers are often unaware of the nature of specific bouts of illness. Disease-reporting systems often do not provide early alerts of foodborne and waterborne disease outbreaks.
- Consumers need to be provided appropriate information, guidance, and encouragement so they can practice basic principles of food safety.
- Research is needed to promote food safety in the following key areas:
  - Rapid detection and identification of foodborne and waterborne biological, chemical, and physical hazards
  - Prevention of food and water, biological, chemical, and physical contamination
  - Achievement of desired behavioral changes among consumers and food producers and processors
  - Measurement of the incidence of foodborne and waterborne illness
  - Assessment of risk related to microbial organisms

Safe Food and Water from Source to Table: Strategies

The following strategies have been identified for enhancing the safety of food and water:

3.1 ***Continue to improve pathogen control strategies.*** Improve the health and environmental status in animal agricultural systems in the United States through appropriate research results and management practices recognized as those minimizing stress and disease. Expand the use of proven research such as baseline studies of microbiological

problems to determine the kind and level of microbial contamination in the slaughter and processing of cattle and other species.

3.2 ***Expand the development and use of proven effective methods that promote food safety.***
Use proven effective methods to expand and improve monitoring of dietary exposure to toxic chemicals in foods and foodborne diseases; to improve detection, quantification, and correction of problems that may slip through the prevention systems.

Continue to expand the food industry's use of the HACCP system as a food safety control strategy. Adapt and apply HACCP to both the pre- and post-harvest of all foods.

Encourage universal adoption of the FDA Model Food Code for retail stores, food service operations, and vending machines by all levels of government.

Continue to ensure that food and food ingredients developed through new processing, preserving, or packaging technologies are safe and nutritious by appropriate and efficient evaluation.

Promote source water protection strategies to prevent pollution in drinking water.

Develop effective frameworks for regulating special nutritional foods, such as dietary supplements, medical foods, and infant formulas to ensure the safety and the nutritional quality of these foods, following the same standards of method and validation as for regular foods.

Use expanded automated information systems such as the Field Automation and Information Management (FAIM) initiative to support the modernization of USDA field inspection programs. Increase automation to enhance information available to in-plant inspectors. Use electronic data entry and reception to improve communication between headquarters and field offices.

3.3 ***Use state-of-the-art technologies to improve food safety.***
Address increased food safety and decreased environmental problems by exploiting, evaluating, and applying new technologies to increase shelf life and eventually decrease the cost of perishable and nutritionally desirable foods such as fresh fruits and vegetables. Use technology to improve food and environmental safety in crop production.

Expand and improve the methodology for assessing and monitoring the safety of food additives and toxic chemicals in foods and for the detection and quantification of foodborne pathogens.

Promote the development and use of reduced risk and biological pesticides (microbial, biochemical, and plant pesticides, including plants that have been genetically engineered) as alternatives to more toxic and persistent conventional pesticides.

Promote the use of Integrated Pest Management (IPM) technologies to develop pesticide use/risk reduction strategies that are site and crop specific.

3.4 ***Expand public education about food and water safety.***
Expand and continually update education programs for the work force in food production, processing, retailing, and handling. Federal, State, and local governments and the private sector should work cooperatively to improve food industry workers' knowledge about food safety practices and the prevention and detection of foodborne diseases. Similar support should be provided to educational programs that train potential food handlers through vocational education at both the school-age and adult levels.

Enhance development and dissemination of culturally and educationally appropriate consumer information on food safety, including foodborne and waterborne illnesses. Promote consumer use of hotlines as a mechanism to eliminate confusion and lack of knowledge about food safety and preparation; e.g., the Federal hotlines for meat, poultry, and seafood.

Ascertain that local, State, and Federal agencies enhance disease reporting systems to more effectively provide early food- and water-related outbreak warnings and information.

Encourage adoption of educational guides covered by USDA's seven guidelines for food handling.

USDA'S Guidelines for Food Handling

1. **Wash hands before handling.**
2. **Keep it safe, refrigerate.**
3. **Don't thaw food on kitchen counter.**
4. **Wash hands, utensils, and surfaces after contact with raw meat and poultry.**
5. **Never leave perishable food out over 2 hours.**
6. **Thoroughly cook raw meat, poultry, and fish.**
7. **Freeze or refrigerate leftovers promptly.**

3.5 ***Improve policy action through research.***
Continue research to develop methods to: Rapidly detect, differentiate, and quantify foodborne and waterborne biological, chemical, and physical hazards; prevent food and water contamination with biological, chemical, and physical hazards; measure the incidence of foodborne and waterborne illnesses; and assess risks associated with microbial organisms.

To improve the chemical and microbiological safety of public water systems, conduct research on the health effects of contaminants, the seasonal and yearly variations, control processes, analytic methodology, and organism survival within water distribution systems.

EPA and industry have agreed to a $50 million, 5-year cooperative research program that looks at health effects, treatment technology, and analytic methods of waterborne biological, chemical, and physical hazards.

Research should also focus on more effective methods to achieve desired behavioral changes in consumers, food producers, and food handlers to improve public response to education about foodborne and water safety.

Expand baseline microbiological studies, including research to describe the ecology and epidemiology of microbial contamination in cattle and other species.

4. Nutrition Monitoring

Background

Nutrition monitoring is vital to policymaking and research. Monitoring provides information and a data base for public policy decisions related to: Identifying high-risk groups that need nutrition assistance and nutrition intervention programs; monitoring food production and marketing; providing information about the relationships between diet, nutrition, and disease; evaluating nutrition assistance and nutrition intervention programs; evaluating issues for fortification, safety, and labeling of the food supply; developing nutrition education and public health nutrition programs; and evaluating changes in agricultural policy that may affect the healthfulness of the U.S. food supply.

Federal Actions to Promote Nutrition Monitoring

Nutrition monitoring in the United States is a complex system of interconnected Federal and State activities that provide information about: The dietary, nutritional, and related health status of Americans; the relationship between diet and health; and the factors affecting dietary and nutritional status.

The National Nutrition Monitoring and Related Research Act of 1990 established the National Nutrition Monitoring and Related Research Program (NNMRRP). The NNMRRP uses surveys, surveillance systems, and other activities to monitor:

- Nutrition and related health measurements
- Food and nutrient consumption
- Knowledge, attitudes, and behavior assessments
- Food composition and nutrient data bases
- Food supply determination

The Act also required formation of an Interagency Board for Nutrition Monitoring and Related Research. This Board has developed the *Comprehensive Ten-Year Plan for Nutrition Monitoring and Related Research* (DHHS/USDA, 1993) to serve as a blueprint in developing Federal work plans and agency budgets. The Act mandated the formation of a National Nutrition Monitoring Advisory Council. The nine-member Council serves as an advisory mechanism on nutrition monitoring.

The Departments of Agriculture and Health and Human Services contract with a scientific body to interpret available data analyses and publish a report on the dietary, nutritional, and health-related status of the people of the United States and the nutritional quality of food consumed in the United States at least once every 5 years. The first report since the passage of the Act was published in December 1995. It is the third in the series of reports for nutrition monitoring in the United States; the first two reports were published in 1986 and 1989. These requirements serve as the basis for planning and coordinating the activities of 21 Federal agencies that either conduct nutrition monitoring surveys and surveillance activities or are major users of nutrition monitoring data. The coordination of diverse research capabilities and information technologies achieved by the NNMRRP provides the basis for an efficient, comprehensive monitoring program. Progress outlined in a report on the first 2 years of the NNMRRP shows important contributions towards meeting current and future public health and nutrition data and policy needs (DHHS/USDA, 1992). With continuing progress, the Program will be well equipped to efficiently identify high-risk populations, to evaluate the effectiveness of intervention strategies, and to provide critical data for nutrition policymaking.

Nutrition Monitoring: Gaps

The Ten-Year Comprehensive Plan for Nutrition Monitoring identified numerous areas for action. For budgetary purposes, however, these areas must be prioritized. The following are considered the most critical gaps in nutrition monitoring:

- Culturally sensitive survey instruments that can be used to obtain information on the dietary and nutritional status of high-risk population groups, including information on American Indians, Alaska Natives, and other groups need to be developed and used.
- A set of methods and interpretive criteria for nutritional status and nutrition-related health conditions as well as improved dietary indicators to be used for nutrition monitoring and surveillance ought to be established and used.
- Guidelines for criteria used to verify and update food composition data and for documenting procedures need to be updated in accordance with new methodologies.

- Methods applicable for use by States and local communities and by researchers that are comparable with national methods and allow for surveillance of national/State/local data need to be developed.
- A research program is needed to apply existing computer technology to support NNMRRP needs.
- Methods to enable monitoring of total nutrient and other intakes from food and dietary supplements are needed.

Nutrition Monitoring: Strategies

To address gaps in nutrition monitoring, the following strategies are recommended:

4.1 ***Assess the dietary, nutritional, and health status of high-risk groups, including American Indians and Alaska Natives.***
Develop a survey model for use with American Indian and Alaska Native populations that measures nutritional status, dietary intake, health indicators of malnutrition, low birth weight, infant mortality, chronic disease, and social indicators of inadequate intake. Nutritional and health status information is vital to making decisions about public health and food assistance programs for these populations. These survey instruments may differ in important ways from those appropriate for the general population but should be capable of linkage for comparison purposes. Some preliminary research in this area is being funded by the National Center for Health Statistics' Minority Health Grant Program. Other groups for consideration include the homeless, inner city and rural poor, and recent immigrants.

4.2 ***Standardize measurement methods and identify key diet indicators to improve the comparability, quality, and use of data across the nutrition monitoring program.***
Such methods need to be used for comparisons between national and State/local levels and national and international levels. A standardized core nutritional status package will include survey methodology, improved dietary indicators, laboratory measurements, and interpretive criteria.

4.3 ***Strengthen the food composition data component of the nutrition monitoring program.***
Establish a government/industry task force to increase the voluntary contribution of food composition data by the food industry and encourage the use of standardized methodology to facilitate use of their data for nutrition monitoring. Develop and implement a plan to add new foods and more brand-specific information and expand the specificity of foods for the National Nutrient Data Bank. Establish guidelines for the criteria used to verify and update food composition data. Establish guidelines for improving the quality of documentation of existing and new food composition data.

4.4 ***Expand and enhance State/local nutrition surveillance efforts.***
Assist States and localities with the identification of potential sources of nutrition surveillance data and with the development of nutrition monitoring procedures and programs through technical assistance and training. Integrate the reporting of local nutrition surveillance data with a national reporting network. Establish a competitive grant and/or cooperative agreement program to assist State and local public health laboratories to acquire equipment, train staff, and build a technology base to support nutrition monitoring. Explore the potential of partnerships with nongovernmental organizations to enhance nutrition surveillance efforts.

4.5 ***Strengthen the research base for the nutrition monitoring program.***
Conduct research in the following areas:

- Development of rapid and reliable methods for the determination of dietary, nutritional, and health status indicators, including in children and other specific population groups.
- Identification of sensitive indicators of dietary, nutritional, and health status.
- The relationship between dietary and health knowledge, attitudes, health status, and food-related behavior.
- Procedures for estimating usual intakes of foods and nutrients from surveys employing 24-hour recalls.
- Development of rapid and reliable methods for the determination of nutrient and other intakes from food and dietary supplements.
- Methodologies for assessing household food consumption.
- Defining and improving the information on human requirements for energy and nutrients throughout the lifespan—particularly the requirements by the elderly, a population segment that is expanding rapidly.
- Evaluation of the effectiveness of food assistance programs on the dietary status of populations using these programs, especially high-risk groups.

5. Promoting Breastfeeding

Background

Breastfeeding is widely acknowledged as the best method for feeding most newborns, the best liquid nourishment through at least the first year of life for most infants, and beneficial to the mother. Benefits for infants include easy digestion, lower frequency and severity of gastrointestinal infections, lower perinatal mortality from infectious diseases, reduced severity of some respiratory infections, reduced frequency of ear infections, protection against food allergies, and protection against certain chronic diseases such as type I diabetes mellitus, lymphoma, and Crohn's disease (Institute of Medicine, 1991).

Breastfeeding has a number of benefits to mothers that include facilitating postpartum recovery, creating a special closeness between mother and infant, and—maybe—lessening the risk of breast cancer. However in a very limited number of situations, breastfeeding is medically contra-indicated.

Government policy strongly promotes and seeks to increase breastfeeding in the United States. The United States endorsed the 1994 resolution of the World Health Assembly on the voluntary International Code for the Marketing of Breastmilk Substitutes, including the tightening up on the provision of free or low-cost supplies of breastmilk substitutes to hospitals and other health care providers (WHO, 1994). A study conducted in the United States to test the feasibility of implementing the UNICEF/WHO Baby Friendly Hospital Initiative indicates that a plan adapted for U.S. conditions and circumstances should be implemented domestically (see Appendix D). The development process is currently underway through nongovernmental organizations.

Objectives related to increasing breastfeeding are included in *Healthy People 2000* (see below).

Healthy People 2000 Objective 14.9 (and 2.11):

Increase to at least 75 percent the proportion of mothers who breastfeed their babies in the early postpartum period and to at least 50 percent the proportion who continue breastfeeding until their babies are 5 to 6 months old. (Baseline: 54 percent at discharge from birth site and 21 percent at 5 to 6 months in 1988.)

Special Population Targets Mothers Breastfeeding Their Babies	1988 Baseline	2000 Target
	Percent	
Early postpartum period		
14.9a Low-income mothers	32	75
14.9b African-American mothers	25	75
14.9c Hispanic mothers	51	75
14.9d American Indian/Alaska Native mothers	47	75
Babies age 5 to 6 months		
14.9a Low-income mothers	9	50
14.9b African-American mothers	8	50
14.9c Hispanic mothers	16	50
14.9d American Indian/Alaska Native mothers	28	50

Progress toward the goals for increased breastfeeding is monitored by HHS. In 1988, 54 percent of women breastfed their babies, and that proportion increased to 56 percent in 1993. The proportion who continue to breastfeed until their babies are 5 to 6 months old was 21 percent in both 1988 and 1993 (DHHS, 1995). Among special population groups, there has been considerable progress in the percent breastfeeding during the early postpartum period. Between 1988 and 1993, breastfeeding by low-income mothers increased from 32 to 38 percent; African-American mothers, from 25 to 31 percent; Hispanic mothers, from 51 to 56 percent; and American Indian or Alaska Native mothers, from 47 to 51 percent (DHHS, 1995).

Federal Support of Breastfeeding

Many Federal programs promote and monitor breastfeeding. The Healthy Mothers, Healthy Babies Coalition, which was convened by the Maternal and Child Health Bureau of HHS in the 1970's, is a comprehensive program for improving maternal and child health. The Coalition, which has active participation by government, academia, and other parts of the private sector, includes a strong component on breastfeeding.

The Maternal and Child Health Bureau of HHS funded demonstrations, training, grants, and reports to enhance the knowledge base and approaches to promote breastfeeding for the 80's and 90's. At present, a workgroup is preparing a statement on contra-indications to breastfeeding that meets professionals' needs.

USDA administers the WIC program that provides nutrition support, nutrition education (with an emphasis on breastfeeding education), and health care referrals to 7 million women, infants, and preschool children including, in 1995, the families of over 45 percent of all infants in the United States. In 1988, about 25 percent of all women with infants participated in the program and received WIC nutrition education during pregnancy; prenatal WIC participation has increased since then. Two major program components promote breastfeeding. WIC funding includes a $21 million minimum set-aside for breastfeeding education, although actual expenditures reached $29 million in 1994. In addition, it provides an enhanced food package as an added benefit for women who are exclusively breastfeeding.

USDA asked Congress for, and in 1992 received, authority to conduct a national breastfeeding promotion campaign. USDA has organized a Breastfeeding Promotion Consortium that includes representatives from government, professional organizations, and nongovernmental organizations, with input from the academic community. The breastfeeding campaign initiative is being designed by the Consortium, and strategies may include, as proposed, building State and community coalitions, strengthening community support services such as telephone hotlines and peer counseling programs, and encouraging those influencing women's infant feeding decisions (e.g., healthcare providers and family members) to change policy and practice to support breastfeeding.

Considerable Federal research is performed in areas related to breastfeeding. A total of $14 million annually, $7 million each from The National Institutes of Health (NIH) and USDA, supports studies related to human milk, breastfeeding, infant feeding, and practitioner knowledge and practice. Elsewhere, the FDA has a study of infant feeding practices underway, and the Food and Consumer Service (FCS) within USDA is conducting a study on infant feeding practices, including breastfeeding, among women participating in the WIC program.

Breastfeeding rates are monitored by private industry and the government. Federal efforts include occasional surveys such as the HHS 1988 National Maternal and Infant Health Survey and, in cooperation with the States, USDA monitoring of WIC participation by breastfeeding mothers and the HHS Prenatal Nutrition Monitoring System.

Private Support of Breastfeeding

Breastfeeding has been actively promoted for many years by the private sector. At the grassroots level, organizations such as the La Leche League have advocated breastfeeding through peer counseling, support groups, and other activities. More recently, breastfeeding promotion has become an important focus of national multisectoral organizations. In 1990, HHS sponsored Maternal and Child Health Interorganizational Nutrition Group (MCHING) that adopted 28 recommendations for improving nutrition in the United States for mothers and children (Sharbaugh, 1991). Recommendations and the associated strategies for action include promotion of breastfeeding (see Appendix D).

A strategy paper developed for the USDA Breastfeeding Promotion Campaign concluded that a multifaceted approach would be necessary for sustained improvement in breastfeeding rates (Arkin, 1993). The following types of strategies were suggested:

- Policy changes (such as those affecting hospitals, public places, counterproductive marketing practices) to enable women to breastfeed.
- Education and training of health care providers (including physicians, nurses, lactation consultants, dietitians, and nutritionists) to encourage women to breastfeed and to provide women with information and counseling to help them develop the skills needed to do so successfully.
- Peer and community outreach to motivate women to initiate breastfeeding and to provide counseling, skill building, and social support for breastfeeding (especially targeting those women less likely to breastfeed).
- Employer support for breastfeeding women returning to the workplace.
- Monitoring the progress of change (Arkin, 1993).

Promoting Breastfeeding: Gaps

Gaps in U.S. activities in breastfeeding promotion primarily relate to barriers to breastfeeding initiation and support and associated research needs:

- A social culture supporting breastfeeding as the standard method of infant feeding needs to be strengthened and expanded.
- There is insufficient professional, institutional, economic, and personal support of breastfeeding.
  - *Professional:* Professional staff providing health care and nutrition support services to pregnant and postpartum women often lack adequate training and experience in lactation management.
  - *Institutional:* Many health care facilities, especially hospital maternity services, have procedures that are barriers to breastfeeding. A trend toward increasingly early discharge from hospitals represents one such barrier to institutional support. Also, there are inadequate supportive processes when mothers are separated from infants at worksites, child-care facilities, and schools.
  - *Economic*: The economic system provides disincentives to continued breastfeeding, including limited maternity leave duration, frequent lack of paid leave during lactation, and only limited availability of telecommuting. These barriers interact with poor support for breastfeeding at worksites and child-care settings to create an economic barrier to breastfeeding.
  - *Personal*: Few social acquaintances and family members are knowledgeable about the benefits of breastfeeding and methods of support for breastfeeding mothers and infants.
- Services designed to promote and support breastfeeding do not reach all eligible individuals during pregnancy and infancy.
- Additional information is needed about breastfeeding patterns and infant feeding decisions and their determinants among the various population subgroups.
- All of the health and long-term social benefits of breastfeeding are not yet known, so it is difficult to estimate the true benefits of breastfeeding for the mother, infant, family, and society.

Promoting Breastfeeding: Strategies

The strategies below build upon several approaches that have been recommended.

5.1 ***Build multisectoral partnerships with a commitment to build a social culture supportive of breastfeeding.***
HHS and USDA partnership efforts (including MCHING and the Breastfeeding Promotion Consortium) can achieve similar and broad commitments at State and local levels. The roles of the various partners and the national-State-local organizations should be delineated. Increased participation, especially on the part of private industry, in commitments to creating a culture and work environment that encourages and supports breastfeeding is desirable. Public recognition awards should showcase effective efforts.

5.2 Regularly update nutrition components of established programs.
Update hospital efforts: hospitals should be encouraged to participate in quality assurance based upon adaptation of the Ten Steps to Successful Breastfeeding developed jointly by UNICEF/WHO (see Appendix D). Hospital accreditation requirements should include physical arrangements and procedures supportive of successful breastfeeding. These

may include, but are not limited to, review of policies related to length of hospital stay and infants' well-being.

Update nutrition education programs: community and program support for breastfeeding should reflect current trends such as short hospital stays for labor and delivery and increasing numbers of working mothers. Nutrition education programs should include a component of support-building before, during, and following pregnancy for both the mother and her significant others and should be culturally appropriate. Information on the health impacts of breastfeeding should be incorporated into comprehensive school health curricula.

Update professional competency: through training and technical assistance, upgrade and maintain knowledge and skills in breastfeeding promotion and lactation management of professionals providing health care and nutrition services to pregnant and postpartum women. Curricula and board and licensing examinations should include modern methods of lactation management.

5.3 ***Use state-of-the-art methods and technologies.***
A broad-based public media campaign should be designed for adoption of breastfeeding as the perceived norm for infant feeding. Targeted media campaign components can be used to reach groups with a low rate of breastfeeding, especially African-Americans and the low-income population, during and after pregnancy. For example, toll-free access to continuous peer and expert support of breastfeeding mothers could be provided. Telecommuting by breastfeeding working mothers can be facilitated by developments in computer and telecommunications systems and supportive management.

5.4 ***Expand proven interventions to fully reach the target groups.***
Breastfeeding education, encouragement, and support for low-income women should be provided through a WIC program serving all those eligible who seek services. Effective employer (including government) and school breastfeeding promotion programs can be identified and expanded by offering recognition to and showcasing these programs. The Lactation Management Curriculum for education of medical, nursing, and nutrition students (Wellstart International, 1994) should be more widely used. Mother-support networks can be expanded and made more accessible.

5.5 ***Improve policy action through research.***
Additional research is needed on the short- and long-term health benefits and other benefits of breastfeeding for mothers and infants, on the determinants of breastfeeding decisions especially related to the role of male partners, on the cost effectiveness of various existing and innovative breastfeeding promotions, and on understanding the influence of environmental factors on breastmilk composition and production.

Research to develop methodologies that can be applied to television and other media programming and to work settings for monitoring efforts to promote a breastfeeding culture should be conducted.

6. Nutrition-Sensitive Food Production, Economic Policy, and Agricultural Research

Background

Nutrition-sensitive food production and economic policies and programs, supported by research, help to provide a safe, abundant, flavorful, and nutritious food supply at affordable prices that assure a fair return to producers.

The United States has a highly productive market-oriented system of food production, processing, and distribution. Basic research has provided the underlying means to achieving this system and has proven to be an important economic investment that yields high returns for the general population. An hour of farm labor produced nearly eight times as much food and other crops in 1987 as it did in 1947. The average American farmer produces food for 128 people—94.3 in the United States and 33.7 abroad. Much of the growth in agricultural productivity can be attributed to Government-supported research on plants and animals. As a consequence, our citizens enjoy an abundant food supply at affordable prices and spend about 11 percent of disposable income on food.

The system is bolstered by a Government infrastructure that provides for an efficient transportation and communication network; supports and conducts basic research on agricultural production, human nutrition, and health; insures the safety and quality of food production; and provides information to consumers for informed dietary choices. Understanding and documenting the economic consequences of these activities to the Nation is important for efficient allocation of resources. Investing in communication, evaluation, and economic research provides improved tools for understanding and quantifying the complex relationships that exist between nutrition and health consequences.

Consumer needs and desires are important factors that help shape food choices, diets, and the food marketplace. These factors include the desire for healthy, fresh, safe, and nutritious foods as well as for increasing variety and convenience. For example, Americans are now eating more fruits and vegetables, consuming less red meats, and drinking more low-fat milk than a decade ago. However, they are also consuming more of some high-fat products, such as cheese, and consuming more soft drinks and salty snacks. Also, over the past 30 years, from a level about half that of grocery stores, food service (e.g., restaurant) sales have grown to virtually equal status. New product introductions making healthy eating claims have more than doubled since 1988.

The Role of Research in Food Production

Research on plant and animal systems provides the new knowledge and technology necessary to ensure an adequate supply of safe, nutritious foods at reasonable prices for the Nation, now and in the future. A basic goal of agricultural research is to develop new techniques and methods for farmers to produce high-yielding, safe, nutritious, high quality commodities, enhance the environment, and conserve energy and natural resources. Integration of genetic mapping presents plants and animal products that are disease and pest resistant, thus reducing chemical applications on the farm. The use of quantitative trait loci by scientists enables increased crop yield and animal growth with less dollar input. This genomic research of putting genes where they are needed is commercially and environmentally friendly.

Genes provide the ultimate road map for controlling physiological and metabolic function. More accurate predictions of growth and taste qualities of food products from plant and animals can be made by quantitative geneticists. They are diligently harnessing and using genetic information to gain desirable traits such as reduced fat in meat. The molecular geneticists are making advances through gene mapping and the identification of desired agricultural traits with DNA-linked markers. Combining and coordinating inputs of quantitative and molecular genetics will offer realization of the full genetic potential of plants and animals. The development of precise and rapid procedures that measure the amount of lean and fat in animals, now underway, is essential for additional progress in creating selection systems. The long-term viability of agricultural production requires that it be in harmony with the environmental priorities and concerns of the Nation. There is an unquestioned need to move towards a more sustainable agricultural system. However, much research is needed to determine how this can best be done and how best to disseminate this information to facilitate transition.

The Federal Government has a major role in this endeavor. The Food, Agriculture, and Trade Act of 1990 recognizes and strongly supports sustainable agriculture. According to the 1990 Act, sustainable agriculture is defined as:

> *"An integrated system of plant and animal production practices having a site specific application that will, over the long term: satisfy human food and fiber needs; enhance environmental quality and the natural resource base upon which the agricultural economy depends; make the most efficient use of nonrenewable resources and on-farm resources and integrate, where appropriate, natural biological cycles and controls; sustain the economic viability of farm operation; and enhance the quality of life for farmers and society as a whole."*

The U.S. food industry also seeks to serve the consumer in achieving the highest possible quality of life. Past successes of the food industry in enhancing human quality of life are largely founded on fundamental and applied research in the biological and physical sciences. Continued success must combine the aim of enhancing the quality of life with the newer imperatives of producing food from plants and animals with optimal use of resources in a complex ecological balance. This requires more interdisciplinary research by scientists than is traditionally associated with food production. These scientists must cooperate and, with producers, determine the optimum level of biologic performance and resources needed to improve the economic viability and environmental stability of U.S. farms and ranches. Limited resources for scientific research dictate that researchable challenges must be identified with reasoned consensus among scientists, food producers, processors, and society as a whole. Results of this research will foster: Improved efficiency of food production and nutritional value of food products from plants and animals; improved environmental quality, integrated plant and animal production systems; enhanced animal well-being; increased safety of food products and increased knowledge of unique nutritional properties of food products; greater knowledge of human nutritional requirements for all age groups; and enhanced information exchange between consumers and the food industry.

The Role of Economic Research in Food Production

Economic research plays a fundamental role in ensuring the wise investment of tax dollars. Cost/benefit analyses have been instrumental in documenting the success of nutrition policies and programs. Documenting the economic success of nutrition interventions and healthy eating is vital to the continued public support for these activities. The food labeling regulatory cost/benefit assessment, WIC cost/benefit analysis, and the school meals regulatory cost/benefit analysis are recent examples of economic analysis that played major roles in documenting the success of Government initiatives. Further research in cost/benefit analysis in areas of nutrition-health linkages and economic methods used in impact analysis is required for increased accuracy and reliability of estimates.

The Role of Communication in Food Production

Information dissemination is another vital component of the Federal Government's infrastructure that helps to make our market-oriented economy one of the most efficient in the world. Information empowers market participants. The Nation's consumers and farmers depend on timely and accurate information to make decisions. For example, farmers need information on alternative production practices, sustainability, yields, environmental hazards, risks, quality of output, sources and prices of inputs, and markets for the commodities produced. Consumers need information on how, where, and what foods to buy in making sound nutrition decisions and in the best use of their food dollars. The Federal Government plays an important role in generating basic nutrition information, disseminating information to the public and information multipliers (e.g., the media, health educators, school teachers) as well as in providing needed information to assure the efficiency and success of producers and marketers.

Nutrition-Sensitive Food Production, Economic Policy, and Research: Gaps

Gaps in nutrition-sensitive food production, economic policy, and research currently hinder efforts to incorporate nutrition considerations and components into national programs and policies. Actions need to address major gaps including:

- Fulfillment of priority nutritional needs through better coordination of national public policy and private efforts.

- Improvement in coordination, development, and dissemination of nutrition information to food producers.
- Improvement in coordination, development, and dissemination of research on sustainable agricultural production systems that enhance product quality, affordability, and efficient use of scarce resources.
- Improvement in research information to support cost/benefit analysis of nutrition policy and programs. Coordination, development, and dissemination of economic research on healthy eating, cost/benefit analysis, and economic methods.
- Increase in interdisciplinary training for individuals pursuing careers in nutrition.

Nutrition-Sensitive Food Production, Economic Policy, and Research: Strategies

The following strategies have been identified to address gaps in these areas:

6.1 ***Conduct basic research needed to enhance plant germplasm to incorporate higher proportions of nutritious and health-beneficial compounds into plant products at lower production costs and to support efficient, competitive, and sustainable production of safe and wholesome food consistent with animal well-being and environmentally acceptable production practices. Conduct basic research to increase nutrient content and quality of plant products for the benefit of society.***
One focus of research should be on grain, fruit, vegetable, and oilseed crops, with a goal of measurably increasing proportions of nutritious and health-beneficial components. The newest technologies in molecular biology should be used to enhance existing crop improvement methods.

6.2 ***Conduct research needed to increase animal and fish production through integrated management and health systems that support efficient, competitive, and sustainable production of safe and wholesome food consistent with animal well-being and environmentally acceptable production practices.***
Government and industry should support basic and applied research to develop genetic markers and advanced methods of genetic selection to produce more desirable and nutritious meat, dairy, and fish products.

An integrated systems approach should be used to evaluate and quantify the interactions between genetics, reproduction, nutrition, immunology, and related effects on animal health, productivity, and the environment.

Gene maps and data bases that identify the important genotype characteristics of the economically important agricultural species should be developed. Research data bases should be integrated into decision-support systems for use by producers.

6.3 ***Adopt new technologies to deliver nutrition information to consumers and producers.***
New and emerging electronic infrastructures provide a timely and cost-effective strategy for coordinating and delivering information from many geographically and organizationally dispersed entities to the public. Electronic applications provide a convenient entry point for one-stop shopping for timely information in a variety of formats and levels of detail depending on the user's needs. Information multipliers in the private sector could also draw upon the system to target the information needs of their clients.

New and proven technologies for coordination, development, and dissemination of a national nutrition education program should serve the general public. This program includes the building of public-private coalitions to more effectively communicate and coordinate nutrition messages.

6.4 ***Conduct and support research on the economic analysis of healthy eating, cost/benefit analysis of nutrition policy and programs, and improved economic analysis methods.***
Research should support improved understanding of linkages between healthy diets and the knowledge, attitudes, and behaviors of consumers as well as the economics of nutrition-health linkages. Economic analyses may include: (1) The cost and benefits to society of healthy eating, (2) the effects that improved diets would have on agricultural production, and (3) effectiveness of nutrition education efforts.

Support should be given to research that improves understanding of: (1) How eating practices are distributed across the population; (2) which population subgroups are making dietary changes, which are not; and (3) the direction of change and the reasons for dietary behavior. The costs and benefits to the groups making and not making diet changes should be documented.

Summary indices of population nutritional and dietary status should be developed, validated, and periodically updated to gauge progress. Indices can be adapted for consumer use as tools to promote prudent personal dietary choices.

Support should be given to research that improves the economic methods used for cost/benefit analysis and for development of methods to integrate sociological and psychological constructs into economic models.

6.5 ***Increase multidisciplinary investment in training for nutrition-related research, policy development, and intervention.***

Multidisciplinary support can assist with the promotion of undergraduate and graduate education in the variety of disciplines needed to promote an ongoing adequate supply of researchers, policy experts, intervention specialists, managers, and academic educators with training and interest in career areas essential to improving domestic nutrition. Interdisciplinary training as an integral component of preparation for careers in nutrition-related fields should increase.

7. Human Nutrition Research

Background

Research on human nutrition, diets, and health helps to provide the means to achieve optimal health and well-being through improved nutrition with a high quality food supply. This research helps to: (1) Define human nutritional requirements throughout life; (2) determine food composition; (3) assess nutritional status; (4) improve the nutritional quality of foods; and (5) understand the links between diet and disease. The benefits of this research reach far beyond our Nation's borders.

As part of research strategy for developing "A Healthy Educated Citizenry," the President's Science Advisor has identified the need for human nutrition research "that is ultimately aimed at promoting health, preventing disease, and reducing health care costs." In response, the Committee on Health, Safety, and Food (CHSF) of the Office of Science and Technology Policy (OSTP) has recommended a National Food and Nutrition Initiative with the goal of achieving a healthier and more productive society through enhanced knowledge of the critical role of diet and physical activity in human health and disease (CHSF, 1995). The following themes are identified for the focus of research as part of the Initiative:

- Basic studies of nutrition and dietary modulation of gene expression and cellular and metabolic processes.
- Energy balance and its implications in obesity, diabetes, and other conditions.
- Research on how to stimulate healthy food, nutrition, and physical activity behaviors, both individually and collectively.

The NSTC reaffirmed the importance of human nutrition research when it pledged to strengthen its integrated, multidisciplinary human nutrition research initiative to: (1) apply the new techniques of molecular biology to understanding how diet causes such profound consequences for health; and (2) stimulate healthy food, nutrition, and physical activity behaviors (CHSF, 1996).

It is estimated that special or accelerated emphasis in these areas would likely yield some significant results in the next 3-5 years and would require additional resources. While some research in these areas may provide immediate effects on improved diet and physical activity, many benefits may not be felt for decades.

The National Academy of Sciences (NAS) has recognized nutrition and food sciences as the most interdisciplinary of all sciences (Institute of Medicine, 1994). The NAS identified more than 30 fields of study as important components of nutrition and food science, including, for example: Agriculture; food engineering and food processing; biochemistry; cell and molecular biology; immunology; animal nutrition; medical and special foods; anthropology; demography; economics; education; epidemiology; and sociology. The CHSF has recommended that the crosscutting nature of nutrition serve as the unifying concept for research in the National Food and Nutrition Initiative.

Human Nutrition Research: Gaps

The CHSF Subcommittee on Human Nutrition Research has outlined a research plan that focuses on the following questions as the basis for addressing promotion of health, preventing disease, and reducing health care costs in our country:

- What is the range in intake of nutrients and other food components that will optimize health and reduce chronic disease risk at different physiological stages?
- What patterns of food intake and physical activity will provide the nutrition standard and appropriate energy balance to improve individuals' health and productivity and to minimize their risk of disease?
- At what points do nutrients interact with human genes to alter disease risk, what are the natures of these interactions, and how can they be modified?
- What factors affect the adoption and maintenance of behaviors that support optimal nutrition and physical activity patterns (e.g., learning style, adaptability, locus of control, family patterns, cultural norms, economic factors, sensory inputs)?
- How can scientific knowledge of optimal nutrition, appropriate food intake patterns, energy balance, and physical activity be translated into community interventions that modify behavior and improve the health and nutritional status of the U.S. population?

Research, the Subcommittee stated, must build on the existing base of Federal nutrition research in order to answer these questions in an accelerated timeframe and should be a Federal priority because of its potential to improve health and thereby reduce long-term health care costs.

Human Nutrition Research: Strategies

Drawing upon the work of the Subcommittee on Human Nutrition Research, the following strategies have been identified:

7.1 ***Support and expand public and private basic and applied research in the following key areas:***

Basic studies of nutrition and dietary modulation of gene expression and cellular and metabolic processes:

- Bionutrition
- Physiological and neurological development
- The role of specific dietary factors in health promotion and disease prevention throughout life
- Interaction of nutrients with environmental agents
- Clinical interventions
- Safe upper limits of nutrients
- Nutritionally vulnerable populations
- Energy balance and its implications in obesity, diabetes, and other conditions
- Prevention of obesity and its associated clinical conditions
- Physical activity and metabolic fitness
- Eating disorders and undernutrition

Research on how to stimulate healthy food, nutrition, and physical activity behaviors, both individually and collectively

- Develop better methodology
- Integrated effective population/community-based interventions

7.2 ***Increase incentives for talented students to pursue higher education and employment in key areas of basic and applied human nutrition research.***

Summary of Nutrition Action Themes for the United States, Domestic Section

This report responds to the Plan of Action for Nutrition adopted at the International Conference on Nutrition in Rome (1992) that called for all participant countries to develop domestic plans. The report outlines the current nutrition situation, how nutrition action is achieved in the United States, the country's overall goal in nutrition action, and seven strategy areas that are means for addressing this goal. Within each strategy area, the current gaps in nutrition actions are identified, and strategies are recommended to address these gaps.

The U.S. goal for its plan is the continued improvement of national nutrition security to achieve a healthier and more productive society. Nutrition security encompasses: The ready availability of safe and nutritionally adequate foods; the ability to acquire acceptable foods; and the provision of an environment that encourages and motivates society to make nutrition choices consistent with good health.

To achieve the overall goal, seven themes should be addressed: (1) Eating for health, (2) food security for all, (3) safe food and water; (4) nutrition monitoring (5) promotion of breastfeeding, (6) nutrition-sensitive food production and economic policy, and (7) nutrition research. Deficiencies or gaps are noted within each of these areas. Effective strategies, some of which are already underway, should be further expanded or developed to address these gaps. It is recommended that the actions outlined in this plan be pursued in order to achieve the goal of a nutritionally secure, and thereby a healthier, more productive society.

Following is the International Section of the Report.

International

Theme 1: Incorporating Nutritional Objectives, Considerations, and Components into Development Policies and Programs

Objective:

Nutritional well-being should be addressed in sustainable national development strategies and integrated into other sectoral concerns by government in collaboration with nongovernmental partners. Where appropriate, in support of developing countries' own efforts, the U.S. Government will: (1) Assist in mobilizing political and policy commitment, (2) create broad-based awareness of the problem, (3) enhance developing country's technical competence and institutional capacity, (4) support relevant applied and operational research, and (5) support replication of successful food security and nutrtion programs that empower women and improve the quality of life.

Activity:

Virtually all elements of the foreign assistance account, including bilateral development projects and programs, U.S. contributions to multilateral development institutions, cash transfers conditioned on reform, and food aid, can be designed to contribute to improved nutrition, whether directly or indirectly. The U.S. Government's objective will be to integrate nutritional concerns where appropriate into its sustainable development agenda. Resources in family planning and health activities, in building democratic institutions, in improving the environment, and in pursuing economic growth may address nutritional objectives. Other development disciplines such as forestry and fisheries can also play a role in household food security—establishing linkages with these disciplines in the area of household food security can lead to more sustainable development projects.

Target Group:

Decisionmakers and agenda setters who influence international, national, and subnational policies, programs, and resource allocations. The community and family system, so as to empower them to have more choices and to facilitate their members' participation in the economic, social, and political processes.

Data Sources/Measurement:

Individual developing country program reporting through USAID Missions, FAO, WHO, and UNICEF. USAID's Demographic and Health Survey (DHS), Child Survival Report, Women in Development Report, Performance Information System for Strategic Management (PRISM) Data Base, and Activity Code/Special Interest (AC/SI) Code. The "World Nutrition Situation" Report compiled from information available to the United Nations agencies by the U.N. Administrative Committee on Coordination-Subcommittee on Nutrition (ACC/SCN).

Actions:

1.1 Political commitment:

1.1.1 Strengthen USAID's humanitarian mission by focusing more explicitly on poverty alleviation and on food security and nutrition programs that empower women and improve the quality of life;

1.1.2 Collaborate with other donors in assisting developing countries in improving and implementing their national nutritional plans, where appropriate.

1.2 Awareness of problem:

1.2.1 Demonstrate to developing country government policymakers from various sectors the economic and social benefits of adequate nutrition;

1.2.2 Call more attention to food and hunger problems by promoting World Food Day and actively promote the President's Annual World Food Day Report;

1.2.3 Emphasize the significant role of women as nurturers and as economic actors in addressing the problem of food insecurity and malnutrition.

1.3 Developing country technical competence and institutional capacity:

1.3.1 Recognize the long-term benefits and support nutrition-related training opportunities for decisionmakers in the health and nutrition fields, as well as in other fields affected by health and nutrition;

1.3.2 Promote nutritional technical and institutional capacity building in developing countries;

1.3.3 Support analysis of the impact of macro-policies on nutritional well-being through development and application of software technology such as PROFILES.

1.4 Applied and operational research:

1.4.1 Seek to have research sponsored by various agencies of the Federal Government address priority nutritional intersectoral issues in agriculture, education, health, resource management, and family planning. Such research should take into account potential cross-over benefits to developing countries where appropriate;

1.4.2 Support research that will generate policy formulation information.

1.5 Establish an interagency, intersectoral mechanism that would have as its mandate the identification of opportunities for coordinated U.S. Government nutritional policy advice and assistance for international issues. Principal participants would be USAID, USDA, DHHS, EPA, OMB, and the NSC/ NEC along with broad representation by NGOs.

Background:

In the period following the 1974 World Food Conference, attention towards nutrition was primarily directed at food production. In the 1980's, there was somewhat greater focus on food policy, with some concern expressed about nutritional status and intervention outcomes. For the most part, however, nutrition policy was addressed when nations faced critical and immediate food and health problems.

Based on a still growing body of policy-relevant research, field program experimentation, and testing, there are important new lines of thinking in the field of human nutrition. We know now for instance, that mild-to-moderate malnutrition has adverse functional consequences; that the effects of malnutrition at critical periods of the life-span have long-term consequences for society as well as the individual; that dietary quality as well as quantity may constrain the development of human potential.

At the same time, development strategies have and are undergoing a significant transformation, with greater attention to family planning and health, the environment, the role of the nonpublic sector, and movement toward broad acceptance of democracy as an underpinning in the development process. Because of the close relationship of these elements with nutrition, they serve to deepen the importance of nutritional well-being for decisionmakers.

Nutrition policy, therefore, has moved from one of immediate response to current needs to one of integration into sustainable, long-term development. The issue of "food security," which recognizes the multisectoral responsibility to guaranteeing food availability, access, and utilization, exemplifies this broadening of policy emphasis.

Theme 2: Improving Household Food Security

Objective:

Improve household food security in developing countries through programs designed to enhance national food production/availability and household access/income. (This objective will be complemented by Themes 4-8, which address the issue of nutrient consumption/utilization, or food security at the "individual" level.)

Activity:

As the variables influencing household food security are diverse, the U.S. Government response must be a multi-sectoral one. In order to address the issue in terms of food availability and access by the household, sectors engaged will include trade (external and internal market functioning), agriculture (productivity and farm income), education, nutrition (household food consumption), and economic development (household income generation). Humanitarian and food assistance will continue to provide a safety net for countries experiencing transient food insecurity.

Target Group:

Policymakers and program managers of national and sub-national governmental and nongovernmental organizations who influence food and economic policy, food availability, or who manage food assistance programs. The community and household, so as to empower them to identify major problems and the means to address them.

Data Sources/Measurement:

USAID's Demographic and Health Survey (DHS), Child Survival Report, Performance Information for Strategic Management (PRISM) data base and Activity Code/Special Interest (AC/SI) code. The President's Annual World Food Day Report, including its Food Security Index and Indicator Trends, the FAO Food Balance Sheet, the "World Nutrition Situation" Report compiled from information available to the United Nations agencies by the U.N. Administrative Committee on Coordination/Subcommittee on Nutrition (ACC/SCN), UNICEF State of the World's Children Report, and the UNDP Human Development Report.

Actions:

2.1 Assist selected host country governments and regional organizations in the formulation, implementation, and maintenance of policies, laws, and institutions that contribute to increasing food security.

2.2 Pursue a collaborative food security strategy with the specialized agencies of the U.N. system, including the World Food Program (WFP), the FAO, the International Fund for Agricultural Development (IFAD), the U.N. High Commissioner for Refugees, UNICEF, and the multilateral development banks.

2.3 Examine in various Organization for Economic Cooperation and Development (OECD) Committees, such as the Development Assistance Committee and the Agricultural Committee, aspects of household food security that might lead to a more effective, coordinated approach.

2.4 Take into account food security considerations in the development of U.S. agricultural trade positions with the view to protecting food supply and access to food of households in developing countries.

2.5 Assist programs that increase the availability of and access to food, through:

- 2.5.1 Promoting improved agricultural techniques, including biotechnology, pest management, irrigation, and sounder use of fertilizers;
- 2.5.2 Improving food preservation, processing and storage, transportation, and marketing of food;
- 2.5.3 Supporting households (urban, rural landless, and farm households who are net food purchasers) to sustainably increase their access to food through the market, through increased income generation opportunities, and through targeted social programs;
- 2.5.4 Identifying and supporting various coping mechanisms to food insecurity, including nonfood/cash crop production, cottage industry, and other income-generating activities.

2.6 Utilize the Agricultural Development and Trade Act of 1990 mandate to enhance "the food security of the developing world through the use of agricultural commodities and local currencies accruing under the Act," and in particular the P.L. 480 Titles II and III legislative flexibility, to design and implement programs that have greater household food security specificity.

2.7 Coordinate with U.S. Government food emergency and disaster assistance programs to better prevent, mitigate, or prepare for short-term food insecurity.

2.8 Pursue ways to improve the nutritional content/ quality of commodities used in food assistance, especially in emergency and refugee situations, from all donors.

2.9 Strengthen the responsiveness of interventions promoting food security by:

2.9.1 Supporting monitoring and early warning systems that will identify populations at nutritional risk and will allow a timely response to impending food crises;

2.9.2 Developing indicators and evaluation mechanisms for better monitoring specific progress toward household food security resulting from food assistance programs.

2.10 Address food availability and environmental carrying capacity by supporting population control programs and incorporating environmental concerns in agriculture and other related areas.

Background:

The FAO estimates that approximately one person in five in the developing world currently suffers from inadequate energy intake, and that an estimated 8-24 million people die of hunger each year. In sum, the current levels of food insecurity are very high, particularly among the most socio-economically vulnerable.

The World Bank estimates that the four most severe "diseases of malnutrition," namely protein-energy malnutrition (PEM) and deficiencies of vitamin A, iodine, and iron, caused a direct loss of almost 46 million disability-adjusted life-years (DALYs) in 1990. These DALYs reflect the future years of disability-free life that are lost due to inadequate nutrition.

The U.S. Government has been actively engaged in providing assistance that enhances household food security since the end of World War II. Since 1954, the P.L. 480 program has provided developing countries with almost $50.0 billion in food assistance. In the most recent fiscal year for which there are data (FY92), 92 countries received assistance through programs implemented by AID. AID and USDA work in partnership with host country governments, private voluntary organizations, and international agencies.

The Agency's mandate for promoting food security extends beyond the administration of food aid. It involves a multi-sectoral approach to food security, covering health, nutrition, economic growth, agricultural production, and environmental conservation. The focus has recently been sharpened so that AID is to consider not only availability of, and access to, food but its utilization at the individual level.

Theme 3: Protecting Consumers Through Improved Food Quality and Safety

Objective:

The provision of a food supply that is nutritionally adequate and safe for human consumption.

Activity:

Promote food quality and safety through multisectoral approaches: food safety/quality legislation backed up with improved inspection and enforcement, improvement of food processing systems, technology transfer to food industries in developing countries (both formal and informal), and consumer education.

Target Group:

At the national and community level, policymakers, decision-makers, private sector professionals and managers involved in the production, processing, and marketing of food. At the household level, those involved in the provision and preparation of food.

Data Source/Measurement:

UNEP/FAO/WHO Food Contamination Monitoring and Assessment Program, USDA and FDA food safety and quality information, Codex Alimentarius.

Actions:

3.1 Promote the development of legislation, regulations, policies, and standards that address the nutritional content and safety of foods.

- 3.1.1 Promote existing international agreements on the marketing and distribution of agrochemicals and industrial chemicals, e.g., the International Code of Conduct on the Distribution and Use of Pesticides;
- 3.1.2 Where appropriate, establish minimum levels of micronutrient content in selected food products and encourage food fortification;
- 3.1.3 Encourage the safe use of food additives and the establishing of recommended maximum levels of biotic and abiotic contaminants in food;
- 3.1.4 Support the development of standards and guidelines for food quality, safety, and labeling such as those developed by the Codex Alimentarius Commission (Codex);
- 3.1.5 Promote greater cooperation among nations in the inspection of food traded on the international market.

3.2 Promote the monitoring of food safety and quality standards, and a means of enforcement, involving the participation of health, agriculture, food industry, and other sectors.

- 3.2.1 Support the dissemination of successful food service quality assurance methodologies, such as Good Manufacturing Practice (GMP) and Hazard Analysis and Critical Control Point (HACCP) programs used in the United States;
- 3.2.2 Assist in the expansion of infrastructures for food inspection and the chemical and microbial analysis of food, including technology transfer to both public and private sector laboratories;
- 3.2.3 Support food contamination data monitoring. Develop an early warning capacity that would include improved reporting of foodborne disease outbreak on a national, regional, and international basis;
- 3.2.4 Promote the application of technical specifications for food composition, quality, and safety for relief commodities.

3.3 Promote safety/quality control practices in the food industry sector during the production, processing, storage, transportation, and distribution of food.

- 3.3.1 Support, where applicable, practices that reduce the levels of agricultural chemicals on/in food products. Promote technology transfer to better assess residue levels;
- 3.3.2 Promote hygienic practices throughout the food industry by establishing appropriate codes and standards, and the training of food handling personnel;
- 3.3.3 Explore and encourage the use of food processing methods that help to reduce or eliminate pathogens;
- 3.3.4 Promote culturally appropriate interventions to improve the safety of street-vended food;
- 3.3.5 Explore the use of food processing techniques that minimize nutrient loss without compromising food safety.

3.4 Promote appropriate consumer education and social marketing programs, especially to those at high risk (the economically disadvantaged, urban poor, etc).

- 3.4.1 Promote hygienic infant feeding practices, including promotion of breastfeeding and discouragement of bottle feeding;
- 3.4.2 Encourage proper food handling at the household level including basic hygiene, safe food preparation, preservation and storage, and where feasible, treatment of water.

3.5 Encourage a coordinated approach among the food industry, agriculture, health, trade, and other sectors in the establishment of food codes and standards, their monitoring and enforcement, and consumer education.

3.6 Encourage the establishment and promotion of consumer groups to ensure community demand for safe, high quality foods.

3.7 Increase efforts to assess the economic and health impact of foodborne disease in order to raise national and international commitment to food safety efforts.

3.8 Promote research in food quality and safety:

- 3.8.1 Better country-specific information on nutrient analysis and food composition;
- 3.8.2 Assessment of fermentation and other simple household technologies to improve food safety;
- 3.8.3 Improvement of the hygienic quality of weaning food;
- 3.8.4 The application of other methods of food preservation;
- 3.8.5 Reduction of nutrient loss during processing.

Background:

Food contamination is responsible for numerous acute and chronic health problems and has substantial economic implications in terms of food loss, health care costs, and lost opportunities for food trade. It has been estimated that of the 1,400 million episodes of diarrhea and 3.2 million deaths that occur worldwide annually in children under the age of 5, contaminated food may account for up to 70 percent of cases. Although it has been well documented that food prepared under unhygienic conditions is a common cause of diarrhea, little attention is given to educating mothers and caregivers about food safety.

In general, due to underreporting, the true incidence of foodborne disease is not fully appreciated, and food safety has not received the full commitment of policymakers in the associated sectors. Even in the United States, CDC estimates that up to 9,000 people die each year from foodborne illness, caused principally by microbiological contamination. The annual costs attributed to one foodborne illness alone, salmonellosis, is about $2 billion. Total economic losses attributable to all foodborne illnesses in the United States probably exceeds $10 billion. More needs to be done to convince policymakers in the developing world (where these diseases are much more prevalent) that just on the compelling basis of economic rationale alone, investing in food safety and quality improvements is well worth the expense.

With the growth in the food industry in developing countries through the support of USAID and other donors, exports of raw and processed foods are accelerating at a high rate. Thus, the safety and well-being of foreign as well as local consumers needs to be carefully addressed. Clearly, growth in the food sector and the worldwide breakdown of trade barriers has created an enormous need for the international harmonization of food standards. There must be increased international agreement and new regulations dealing with toxic contaminants and quality-reducing adulterants that accompany foods across country borders.

These issues put at risk the public health and well-being of both the producer and consumer. The solution will require a multisectoral effort that, in the end, must be able to be enforced. Efforts in education, legislation, and inspection will not be enough. WHO has developed the concept of a "shared" responsibility among the principal partners (government, consumers, industry, and trade) that needs further development and consensus in the developing world context. The more this "shared responsibility" can emphasize "prevention" as opposed to "reaction," the more cost-effective these mutually agreed-upon food safety strategies will be.

Theme 4: Preventing and Managing Infectious Disease

Objective:

Reduction in the incidence of nutritional deficiencies related to infectious diseases, and improved nutritional care in the treatment of these conditions.

Activity:

As nutritional outcome is directly affected by infectious disease prevalence, the U.S. Government will continue to support activities that integrate nutritional considerations and objectives into infectious disease control: Support to public health measures to decrease endemic disease and limit outbreaks; nutrition education to promote improved infant feeding/weaning dietary practices; and guidance in nutritional therapy during infectious disease treatment.

Target Group:

Policymakers, program managers, and practitioners in those sectors that play a role in infectious disease control: Health, water, sanitation, food industry, education, and others. At the community and household level, those involved with the provision of safe food and water, sanitation, and health education.

Data Sources/Measurement:

Epidemiological surveillance data from WHO and CDC, USAID's Demographic and Health Survey (DHS), Child Survival Report, and national and local data sources.

Actions:

4.1 Encourage, where needed, integrated and multi-sectoral strategies for preventing and controlling infectious disease.

4.2 Support the provision of health care (including immunization), water, sanitation, and other services that reduce infectious disease incidence, especially in vulnerable populations. Special attention will be paid to the control of diarrheal disease, measles, AIDS, respiratory infections, tuberculosis, anemia, malaria, and other parasitic infections.

4.3 At the community and household level, support communications and education programs that reduce infectious disease incidence through behavior modification.

- 4.3.1 Support programs that promote optimal breast-feeding, weaning, and infant feeding practices;
- 4.3.2 Encourage adequate micronutrient intake and, in particular, vitamin A, in order to strengthen immunological response.

4.4 Integrate appropriate nutritional care in infectious disease treatment:

- 4.4.1 At the institutional level, encourage incorporation of appropriate dietary treatment procedures to improve outcome;
- 4.4.2 At the household and community level, encourage the development and implementation of nutrition education related to dietary practices during diarrhea and other acute and chronic illnesses, stressing the importance of continued breast-feeding.

4.5 Encourage a coordinated analysis of nutritional and infectious disease data in order to improve collaboration in prevention and control efforts.

4.6 Support activities that integrate nutritional concerns into the case management training of health workers, those in the food industry, educators, sanitarians, and others. Similarly, train nutrition professionals in the concepts of the "infection-malnutrition" complex.

4.7 Support research activities that investigate the relationship of iron and other micronutrients to infectious disease and immune response.

Background:

Diarrhea and acute respiratory infections (ARI) are two of the most common preventable causes of death in young children worldwide. High morbidity and mortality rates often attributed to infectious disease or malnutrition alone are in fact caused by the synergistic effects of both conditions present simultaneously. Poor nutritional status leads to compromised immune status and poorer disease outcome, including increased mortality (as in the case of measles or ARI); infectious disease may reduce the intake and absorption of nutrients and cause losses of endogenous nutrient stores. It seems that even mild degrees of malnutrition may increase morbidity and mortality, which should broaden attention to include mild-moderate as well as severe nutritional deficiency.

This "infection-malnutrition complex" is becoming of increasing concern, with rising population growth, urbanization, and the need to expand adequate water supply and waste disposal systems.

The scientific community's attention towards the infection/malnutrition relationship has grown in recent years and is the strongest argument for the need to further integrate efforts in health, nutrition, and sanitation.

However, further emphasis should stress a more coordinated approach in the implementation of programs among the various interested sectors.

Theme 5: Promoting Breastfeeding

Objective:

To improve maternal and child nutritional and health status through the promotion of breastfeeding by creating an environment of awareness and support so that those women who choose to breastfeed are able to do so. The goal is to increase the percentage of infants who are: (1) Breastfed within 1 hour of delivery; (2) exclusively breastfed from birth through 4 to 6 months of age; (3) fed appropriate complementary foods in addition to breast milk by the end of 6 months of age; and (4) breastfed for 1 year or longer.

Activity:

Breastfeeding protection, promotion, and support will be fully integrated into USAID's nutrition, child survival, maternal health, and population programs.

Target Group:

Reach families, mothers, and children through national health policy decisionmakers; media; hospital administrators; community/NGOs; private voluntary organizations; teaching hospitals; schools of public health, medicine, dietetics, nursing, and nutrition; ministries of health, education, and planning and international organizations such as UNICEF, WHO, and the World Bank.

Data Sources:

USAID's Demographic and Health Surveys (DHS), Child Survival Report, Wellstart lactation management education program country status reports. WHO global breastfeeding trends monitoring system, UNICEF Baby Friendly Hospital Initiative progress reports, and UNICEF State of the World's Children Report. National breastfeeding assessments conducted by USAID and others, and relevant project and institutional reports.

Actions:

5.1 Support comprehensive national programs that include the following components:

- 5.1.1 Development of a national breastfeeding policy;
- 5.1.2 A national breastfeeding coordinating body with multisectoral representation;

5.1.3 National targets for improving breastfeeding practices with a national system for monitoring attainment of those targets;

5.1.4 Adherence by all health facilities to the Ten Steps to Successful Breastfeeding, set out in the joint WHO/UNICEF statement "Protecting, Promoting and Supporting Breastfeeding: The Special Role of Maternity Services";

5.1.5 Training of maternal and child health care staff in the implementation of breastfeeding activities, including those assisting home births or traditional birth attendants;

5.1.6 Integration of breastfeeding policies into child survival, maternal health, nutrition, and family planning programs.

5.2 Explore community-based support group activities for lactating women and incorporate such activities into national breastfeeding initiatives.

5.3 Support communication and social marketing initiatives to promote health behavior change that improves breastfeeding practices.

5.4 Promote better nutrition for women of reproductive age in order to improve maternal and child nutritional status and lactation performance.

5.5 Encourage efforts that facilitate lactation at the worksite, both in the creation of policy as well as in implementation.

5.6 Support research that explores the biomedical, social, and programmatic gaps in knowledge about breastfeeding in collaboration with host country institutions.

5.7 Develop policy/guidelines for use of infant formula for emergency humanitarian assistance.

5.8 Reexamine the U.S. Government policy on the marketing of breastmilk substitutes.

Background:

USAID breastfeeding strategy (as well as the advocacy role Agency and cooperating agencies have played internationally) has had a significant catalyzing effect globally at the donor as well as developing-country level. USAID co-sponsored the "Breastfeeding in the 1990s, a Global Initiative" in Florence, Italy. Breastfeeding promotion goals (Innocenti Declaration) from this meeting were carried forth into the World Summit for Children Declaration.

At the end of 1991, USAID launched a 5-year, $30 million Expanded Promotion of Breastfeeding Program (EPB). EPB is based on lactation management education (LME) developed by Wellstart with USAID support since 1983. Nearly 475 participants of the LME program now form a network of Wellstart Associates in 42 countries. In 1991, USAID also renewed the Georgetown University's Institute for Reproductive Health (IRH) cooperative agreement for another 5 years with $14 million of a total $28 million dedicated to breastfeeding for birth spacing.

Georgetown University (IRH) and Wellstart have recently been recognized as WHO International Breastfeeding Collaborating Centers. USAID is also working closely with the Baby Friendly Hospital Initiative.

Theme 6: Caring for the Socioeconomically Deprived and Nutritionally Vulnerable

Objective:

Assist national and local governments, PVOs and NGOs, and private sector entities in the development and implementation of sustainable policies, strategies, and programs at the community and family level that will: (1) Improve the nutritional status of infants, young children, adolescent girls and women of reproductive age, the elderly, and other vulnerable groups; (2) constitute a collaborative emergency response in disaster situations; and (3) encourage self-reliance and community participation.

Activity:

The U.S. Government will support activities that integrate community mobilization and participation and the key role of the family in ensuring that nutritionally vulnerable populations have access to and utilize food, health services, and other resources.

Target Group:

National through local level policymakers in the economic and social sectors and in other nutrition-relevant sectors including education, housing, health, and credit. Organizations who work at the community, family, and individual level and provide support to those at risk and their caregivers.

Data Sources/Measurements:

UNDP Human Development Report, World Bank's World Development Report. Individual country programs reporting through USAID Missions, FAO, WHO and UNICEF. USAID's Demographic and Health Surveys (DHS), Child Survival Report, Women in Development Report, Living Standards Measurements Surveys (LSMS), PAPCHILD, World Bank's World Tables.

Actions:

6.1 Support comprehensive activities to improve the nutritional status of women and children in developing countries.

6.1.1 Support activities that specifically address women's nutrition, income generation, education/literacy, and other areas;

6.1.2 Support operations research that addresses sociocultural norms and intrafamily dynamics as they affect the allocation of, control, and access to food for those at risk.

6.2 Strengthen efforts that are aimed at improving care for socioeconomically deprived and other vulnerable groups, including refugees and displaced persons, the landless and unemployed, and the urban poor.

6.2.1 Assist organizations involved in food aid/distribution programs and other nutritional interventions to improve their effectiveness in targeting the nutritionally vulnerable at the community, family/household, and individual levels;

6.2.2 Support activities that enhance coping strategies and income of vulnerable populations, encouraging their self-reliance and integration with society.

6.3 As appropriate, continue and expand activities to assess nutritional needs and practices of adolescent girls.

6.4 As appropriate, continue and expand activities that support the participation of men and other family members, as well as women, in the provision of care for those most at risk.

Background:

Persons at nutritional risk include those at the household level (women of reproductive age, children) as well as sectors of society at socioeconomic or other disadvantage (refugees, displaced persons, the landless, and others).

In many cases, it is the family that supports and constrains individuals as they seek to access resources, including food. Within the family, people are nurtured, sheltered, and educated, and resources are mobilized, often collectively, to meet the needs of those most at risk.

Recognition of the importance of the family has entered into the development debate: Several years ago USAID initiated a Family and Development Program; 1994 has been proclaimed the International Year of the Family; at the International Conference on Nutrition, the family was recognized as a key factor affecting the nutritional status of individuals, particularly those most at risk.

Care of those at risk is often assumed to be provided by the family, particularly by women. At the same time, excessive demands are being placed on women's time and on household resources with the result that the capacities of many families to provide care to its members and to meet the household's food demands are being overwhelmed. The result is that many families are in crisis.

Household-level analyses that provide an understanding of the family system—how it affects its members and its impact on the economy—is vital to strengthening the participation of family members in the processes of development. Positive steps to empower family members will equip them to bargain for a greater access to resources, including food within and outside the household. Strengthening the participation of family members in the processes of development is not only a cause and effect of improved nutritional well-being, it is also key to the development of human resources and a rise in the living standards of people throughout the world.

In some circumstances, however, those at nutritional risk are dependent on the community, the State, or nongovernmental institutions to provide for their basic needs for food, health services, and a healthy environment. The challenge to these organizations is to ensure, in a timely manner, the availability of and access to these services, while also supporting local coping strategies that reduce dependency on external aid.

Theme 7: Preventing and Controlling Specific Micronutrient Deficiencies

Objective:

Assist developing country governments, researchers, NGOs, PVOs, industry, and donor organizations/agencies in eradicating vitamin A and iodine deficiencies and substantially reducing iron deficiency anemia by the year 2000.

Activity:

Relevant sector activities undertaken by U.S. Government agencies will be drawn upon to pursue an integrated strategy towards micronutrient deficiency prevention and control. The main effort will be to build on research and operational activities carried out by USAID in the field of nutrition. Other sector activities will be included: Private sector; health, where there are potential linkages with health service delivery; agriculture, where there are linkages with the International Agriculture Research Centers and agriculture extension agents; education, where there is growing attention to child's nutritional status and cognitive development relative to learning capacity as a key component of educational investment and outcome.

Target Group:

Policymakers, private industry managers, resource and program managers who are in a position to improve the micronutrient status of vulnerable groups, particularly infants, children, adolescent girls, women, and the aged.

Data Sources/Measurement:

Developing country statistical and program reporting provided through USAID Missions, FAO, WHO, and UNICEF. USAID's Demographic and Health Surveys (DHS), Child Survival Report, Women in Development Report, PRISM Data base and AC/SI Code. Reports of the consultative groups in specific micronutrients, such as the International Vitamin A Consultative Group (IVACG), the International Nutritional Anemia Consultative Group (INACG), the International Council for the Control of Iodine Deficiency Disorders (ICCIDD).

Actions:

7.1 Continue and expand activities to:

7.1.1 Assess the extent, location, and severity of micronutrient deficiencies including the development and testing of field appropriate, noninvasive methods for assessment of micronutrient status;

7.1.2 Support advocacy and policy formulation at all levels;

7.1.3 Support operational research including cost-effectiveness studies to better articulate the economic rationale of micronutrient intervention programs (e.g., PROFILES—an interactive nutrition computer model);

7.1.4 Design, field test, and implement sustainable food-based (dietary diversification, fortification, home and community gardening, etc.) programs through IEC and public/private sector involvement;

7.1.5 Support targeted supplementation as a short-term strategy as necessary;

7.1.6 Monitor progress toward achieving global micronutrient goals by the year 2000 by providing guidelines for the monitoring and evaluation of interventions;

7.1.7 Ensure inclusion of gender considerations.

7.2 Collaborate with regional public and private sector organizations to collect data and test technologies and techniques.

7.3 Continue efforts to identify and test combined micronutrient malnutrition intervention efforts (e.g., double fortification, food-to-food fortification).

7.4 Exchange information on a regular basis with DHHS, USDA, DOD, and the NAS/IOM in order to benefit from scientific developments in the areas of micronutrient research.

7.5 Strengthen the international micronutrient consultative group network and promote coordination among existing consultative groups.

7.6 Work with the International Agricultural Research Centers to better understand the dynamics of individual and household food consumption patterns specifically related to micronutrient-rich foods and explore the issues involved in breeding such foods.

Background:

Basic research has identified serious health and development consequences associated with micronutrient deficiencies. These deficiency disorders can cause long-term detrimental social and economic consequences for the individual, the community, and at national level. Nutrition research indicates that increased consumption of micronutrients is associated with decreased morbidity and mortality among children and women, increased productivity, and improved mental development and performance in infants and children. The direct and indirect benefits from micronutrient adequacy include increased household and labor output, reduced health care costs, and more efficient educational expenditures as a result of lower absenteeism and grade repetition, producing better and faster learners.

For over two decades, USAID has focused on identifying the constraints to reducing micronutrient deficiencies. As a result, there is growing confidence that such deficiencies can be successfully reduced by food fortification, nutrition education, dietary diversification, and targeted supplementation. Further, these programs are highly cost-effective and can readily be integrated into other development strategies.

Theme 8: Promoting Appropriate Diets and Healthy Lifestyles

Objective:

Prevention and reduction of nutritional deficiencies and diet-related noncommunicable diseases through the improvement of dietary practices and other related behavior.

Activity:

Support the design, implementation, and evaluation of interventions that can affect behaviors to prevent both nutritional deficiencies and nutrition-related chronic disease.

Target Group:

At the program level, policymakers, program managers and practitioners in health and nutrition programs, educators, and those involved in food production and marketing. At the community and household level, those involved in the production, preservation, distribution, purchase, and preparation of food.

Data Sources/Measurement:

Individual country programs reporting through USAID Missions, FAO, WHO, and UNICEF. USAID's Demographic and Health Surveys (DHS), Child Survival Report, Women in Development Report, Performance Information System for Strategic Management (PRISM) Data base and Activity/ Special Interest (AC/SI) code. Knowledge, Attitude and Practice (KAP) surveys, market research on dietary trends; reports and research from policy and academic institutions on health behavior; data on chronic noncommunicable diseases from U.S. Government agencies, including CDC and NIH.

Actions:

8.1 Integrate nutrition and health education as key components in other sector interventions, thus increasing reach and sustainability. (Sectors that could be involved include agriculture, education, environment, water, and food industry.)

8.1.1 Incorporate nutrition education into Maternal and Child Health (MCH) and early childhood programs, parent education, schools, and health clinics using formal and nonformal methods;

8.1.2 Encourage social marketing efforts aimed at the community level using a variety of communication instruments (e.g., radio, posters) to deliver nutrition messages to target populations;

8.1.3 Support programs that promote a "healthy lifestyle" (including exercise, reduced smoking and alcohol consumption, and stress reduction);

8.1.4 Support linkages between nutrition education programs and literacy, campaigns, with special attention to female literacy;

8.2 Encourage, where appropriate, the creation of national dietary guidelines that are intended to improve diets and lifestyles in order to prevent both undernutrition and dietary imbalances that can cause chronic disease.

8.3 Strengthen institutional capacity and human resources development to increase the impact of nutrition communications programs:

8.3.1 Support efforts, including ethnographic studies and formative research to improve nutrition education methods, including techniques to identify target behaviors and mix of communication channels;

8.3.2 Promote operational research to improve qualitative and quantitative measures to monitor and evaluate the effectiveness of nutrition communication programs;

8.3.3 Facilitate the dissemination of lessons learned through nutrition education experiences by developing and developed countries, including those related to chronic noncommunicable diseases.

8.4 In developing National Plans of Action for Nutrition, emphasize the importance of behavioral change interventions in promoting food security, food quality/safety, breastfeeding and infant feeding, and the prevention of micronutrient malnutrition.

8.5 In those developing countries where appropriate, incorporate the monitoring of nutrition-related chronic disease into existing sources of data.

Background:

There are at least 2 billion people worldwide who are probably affected by one or more nutritional deficiencies. Individual dietary habits are largely influenced by cultural norms, economic status, and environmental conditions. According to the World Bank's "World Development Report (1993)—Investing in Health," inducing behavioral change—thus enabling families to improve their diets even without additional income—is often the most cost-effective way to improve nutritional status.

Over the past two decades, communication specialists have contributed to efforts that enable people (both in developed and developing countries) to change their dietary behavior for the better. They have used effective communication techniques, derived from marketing and behavioral sciences, to better understand nutrition-related behavioral patterns within a larger social context. Such understanding is based on community participation in all aspects of formative research, message development, and pretesting. The evidence is conclusive that nutrition communication can teach people, can help them develop necessary skills, and can motivate them to make healthier lifestyle changes.

Theme 9: Assessing, Analyzing, and Monitoring Nutrition Situations

Objective:

Support the development of a nutrition data system to assess and analyze nutrition and food security status for the purposes of targeting, designing, monitoring, and evaluating policies and programs.

Activity:

Provide technical assistance and training on various areas of nutrition surveys and surveillance systems by a variety of U.S. Government agencies, including USAID, CDC, and NCHS/CDC's WHO Collaborating Center on Health Examination Statistics.

Target Group:

International, national, and subnational decisionmakers who influence policies, programs, and resource allocation. Program and project managers.The community, so as to empower it to identify major problems and the means to address them.

Data Sources/Measurement:

Individual developing country programs reporting through USAID Missions, FAO, WHO, and UNICEF. USAID's Demographic and Health Survey (DHS), the Famine Early Warning System (FEWS), Child Survival Report, Performance Information for Strategic Management (PRISM) Data base, Activity Code/Special Interest (AC/SI) code. Community-based information systems. Rapid assessment reports of nutrition.

Actions:

9.1 Provide technical assistance and training to developed and developing countries that wish to carry out national or subnational nutrition surveys and surveillance, including, but not limited to:

9.1.1 The development and implementation of a detailed "nutrition-module" to be included in the USAID's DHS;

9.1.2 Assistance to organizations involved in P.L. 480 food aid programs to design and incorporate nutrition information systems to track the food security impact;

9.1.3 Rapid assessments of nutrition as indicated by an emerging food security crisis.

9.2 Support the development of user-friendly instruments that present and facilitate data analysis by program managers and policymakers (e.g., PROFILES—an interactive nutrition computer model).

9.3 Provide technical assistance and training for program managers in the analysis and interpretation of nutrition data and its use for policy development and program planning.

9.4 Support operational research on the development of standard community-based indicators of nutritional status and food security.

9.5 Assist in the standardization of methods and indicators used in the international arena to increase data comparability among countries.

9.6 Support the development of Food Composition tables for developing country diets in collaboration with other donor agencies.

Background

Recent methodological and technological advances have made it possible to provide timely and cost-effective nutrition-related information for targeting of vulnerable groups and evaluating nutritional outcomes of selected interventions. Although past systems have largely focused on nutritional status, increasingly it has been recognized that information on other factors (e.g., food prices, behavioral change) needs to be considered in assessing overall food and nutritional systems. The addition of societal measures will improve early warning systems and monitoring.

Many methods have been developed and tested in a variety of settings. Clearly, there is a need to review and select those systems that are most effective, economical, and sustainable.

Emphasis should be placed on improving institutional capacity to analyze and use the available data. This would benefit developed and developing countries in planning for health and nutrition programs, especially among lower level managers.

The challenge will be to maintain technologically appropriate survey and surveillance systems and to ensure that the capacity to integrate the information into successful strategies is developed.

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Appendix A
Key U.S. Nutrition-Relevant Legislation

General

Coordination of nutrition monitoring and research activities across Government, and periodic review of the *Dietary Guidelines for Americans* are authorized by P.L. 101-445, the Nutrition Monitoring and Related Research Act of 1990.

USDA

Basic human nutrition research conducted by the USDA Agricultural Research Service was initially authorized by the Department of Agriculture Organic Act of 1862. It has since been expanded by the Research and Marketing Act of 1946, as amended, the Food and Agriculture Act of 1977, as amended, and the Food, Agriculture, Conservation, and Trade (FACT) Act of 1990.

The National Research Initiative Competitive Grants, many of which focus on food and nutrition, were initiated in 1965 and currently are authorized by P.L. 101-624, the Food, Agriculture, Conservation, and Trade (FACT) Act of 1990.

Cooperative Extension efforts were originally established by the Smith-Lever act of 1914. This activity, which includes nutrition programs such as the Expanded Food and Nutrition Education Program, is currently authorized by the Food and Agriculture Act of 1977, as amended.

The USDA Economic Research Service was established in 1961 principally under the authority of the Agricultural Marketing Act of 1946.

The meat and poultry safety, inspection, and labeling activities of the USDA Food Safety Inspection Service are authorized by the Federal Meat Inspection Act of 1907, P.L. 59-242, as amended (21 USC 601 et seq.), the Poultry Products Inspection Act of 1957, P.L. 85-172 (21 USC 451 et seq.), and the Agricultural Marketing Act of 1946, (7 USC 1621 et seq.).

The following public laws authorize the 16 domestic food assistance programs:

1. **Food Stamp Program**
   Originally authorized by the Food Stamp Act of 1964 and expanded to national eligibility standards by the Food Stamp Act of 1977, as amended. Currently authorized by P.L. 101-624, the Food, Agriculture, Conservation, and Trade (FACT) Act of 1990.

2. **National School Lunch Program**
   Originally authorized in 1946 by P.L. 79-396. Currently authorized by the National School Lunch Act, as amended by P.L. 103-448.

3. **School Breakfast Program**
   Originally authorized as a pilot program in 1966 by P.L. 89-642 and authorized as permanent program in 1975 by P.L. 94-105. Currently authorized by the Child Nutrition Act of 1966, as amended by P.L. 103.448.

4. **Child and Adult Care Food Program**
   Originally authorized as a pilot program in 1968 by P.L. 90-302 and authorized as a permanent program in 1975 by P.L. 94-105. Currently authorized by the National School Lunch Act, as amended by P.L. 103-448.

5. **Summer Food Service Program for Children**
   Originally authorized as a pilot program in 1968 by P.L. 90-302 and authorized as permanent program in 1975 by P.L. 94-105. Currently authorized by the National School Lunch Act, as amended by P.L. 103-448.

6. **Special Milk Program**
   Originally authorized in 1954 by P.L. 83-960 and authorized as a permanent program in 1966 by P.L. 89-642. Currently authorized by the Child Nutrition Act of 1966, as amended by P.L. 103-448.

7. **Nutrition Education and Training Program**
   Originally authorized in 1977 by P.L. 95-166. Currently authorized by the Child Nutrition Act of 1966, as amended by P.L. 103-448.

8. **Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)**
   Originally authorized as a pilot program in 1972 by P.L. 92-433 and authorized as permanent program in 1978 by P.L. 95-627. Currently authorized by the Child Nutrition Act of 1966, as amended by P.L. 103-448.

9. **Commodity Supplemental Food Program**
   Women, infants, and children component originally authorized as a pilot program in 1981 by P.L. 97-98 and as a permanent component in 1985 by P.L. 99-198. Currently authorized by the Agriculture and Consumer Protection Act of 1973, as amended by P.L. 101-624.

10. **Farmers' Market Nutrition Program**
    Originally authorized as a pilot program in 1988 by P.L. 100-435 and authorized as a permanent program in 1992 by P.L. 12-314. Currently authorized by the Child Nutrition Act of 1966, as amended by P.L. 103-448.

11. **The Emergency Food Assistance Program**
    Evolved from the Special Dairy Distribution Program initiated in 1981. Specifically authorized in 1983 by P.L. 98-8. Currently authorized by the Emergency Food Assistance Act of 1983, as amended by P.L. 101-624.

12. **Nutrition Assistance Program for Puerto Rico**
    Originally authorized by the Omnibus Budget Reconciliation Act of 1981 (P.L. 97-35). Currently authorized by P.L. 101-624, the Food, Agriculture, Conservation, and Trade (FACT) Act of 1990.

13. **Food Distribution Program on Indian Reservations**
    Originally authorized in 1977 by P.L. 95-113. Currently authorized by the Food Stamp Act of 1977, as amended by P.L. 101-624, and the Agriculture and Consumer Protection Act of 1973, as amended by P.L. 101-624.

14. **Commodities for Soup Kitchens**
    Originally authorized in 1988 by P.L. 100-435. Currently authorized by the Hunger Prevention Act of 1988, as amended P.L. 103-624.

15. **Nutrition Program for the Elderly**
    Originally authorized in 1972 by P.L. 92-258. Currently authorized by the older Americans Act of 1965, as amended P.L. 102-375.

16. **Homeless Children Nutrition Program**
    Initiated as a pilot program in 1989 by P.L. 101-147. Made permanent in 1994 by P.L. 103-448. Currently authorized by the National School Lunch Act, as amended by P.L. 103-448.

HHS

Public Health Survey Act of 1956 (section 306). The act mandated that NCHS conduct health surveys.

Preventive Health Amendments of 1993 to the Public Health Service Act. Section 1709, Biennial Report Regarding Nutrition and Health:

The Amendments were enacted to require biennial reporting on relationships between nutrition and health to Congress by the U.S. Public Health Service.

Federal Food, Drug, and Cosmetic Act:

The Act, which is administered by FDA, contains provisions to ensure the safety of the food supply and honesty in food labeling, with special provisions for nutrition labeling, infant formulas, and other nutrition-related areas.

National Institutes of Health:

A number of the Institutes established by Congress engage in nutrition-related research. The NIH Program encompasses cross-cutting nutrition research that includes the prevention of some of the most common nutrition-related disorders of our society—obesity, coronary heart disease, cancer, and osteoporosis—and the study of nutrition throughout the life cycle.

The Older Americans Act (P.L. 102-375) was reauthorized in 1995. Authorization of appropriations expire at the end of Fiscal Year 1995. The Older Americans Act authorizes the elderly nutrition program, including congregate and home-delivered meals, under Titles III and VI. Title III provides for services to all older Americans; Title VI provides for services to American Indians, Alaska Natives, and Native Hawaiians.

Appendix B
Healthy People 2000 Nutrition Objectives

Health Status

2.1 Reduce coronary heart disease deaths to no more than 100 per 100,000 people.

2.2 Reverse the rise in cancer deaths to achieve a rate of no more than 130 per 100,000 people.

2.3 Reduce overweight to a prevalence of no more than 20 percent among people aged 20 and older and no more than 15 percent among adolescents aged 12 through 19.

2.4 Reduce growth retardation among low-income children aged 5 and younger to less than 10 percent.

Risk Reduction

2.5 Reduce dietary fat intake to an average of 30 percent of calories or less and average saturated fat intake to less than 10 percent of calories among people age 2 and older. In addition, increase to at least 50 percent the proportion of people age 2 and older who meet the *Dietary Guidelines*' average daily goal of no more than 30 percent of calories from fat, and increase to at least 50 percent the proportion of people age 2 and older who meet the average daily goal of less than 10 percent of calories from saturated fat.

2.6 Increase complex carbohydrate and fiber-containing foods in the diets of adults to five or more daily servings for vegetables (including legumes) and fruits, and to six or more daily servings for grain products. In addition, increase to at least 50 percent the proportion of people age 2 and older who meet the *Dietary Guidelines*' average goal of five or more servings of vegetables/fruits, and increase to at least 50 percent the proportion who meet the goal of six or more servings of grain products.

2.7 Increase to at least 50 percent the proportion of overweight people age 12 and older who have adopted sound dietary practices combined with regular physical activity to attain an appropriate body weight.

2.8 Increase calcium intake so at least 50 percent of pregnant and lactating women consume an average of three or more daily servings of foods rich in calcium, and at least 75 percent of children age 2-10 and 50 percent of people age 25 and older consume an average of two or more servings daily.

2.9 Decrease salt and sodium intake so at least 65 percent of home meal preparers prepare foods without adding salt, at least 80 percent of people avoid using salt at the table, and at least 40 percent of adults regularly purchase foods modified or lower in sodium.

2.10 Reduce iron deficiency to less than 3 percent among children age 1-4 and among women of childbearing age.

2.11 Increase to at least 75 percent the proportion of mothers who breastfeed their babies in the early postpartum period and to at least 50 percent the proportion who continue breastfeeding until their babies are 5 to 6 months old.

2.12 Increase to at least 75 percent the proportion of parents and caregivers who use feeding practices that prevent baby bottle tooth decay.

2.13 Increase to at least 85 percent the proportion of people age 18 and older who use food labels to make nutritious food selections.

Services and Protection

2.14 Achieve useful and informative nutrition labeling for virtually all processed foods and at least 40 percent of ready-to-eat, carry-away foods. Achieve compliance by at least 90 percent of retailers with the voluntary labeling of fresh meats, poultry, seafood, fruits, and vegetables.

2.15 Increase to at least 5,000 brand items the availability of processed food products that are reduced in fat and saturated fat.

2.16 Increase to at least 90 percent the proportion of restaurants and institutional food service operations that offer identifiable low-fat, low-calorie food choices, consistent with the *Dietary Guidelines for Americans.*

2.17 Increase to at least 90 percent the proportion of school lunch and breakfast services and child care food services with menus that are consistent with the nutrition principles in the *Dietary Guidelines for Americans.*

2.18 Increase to at least 80 percent the receipt of home food services by people age 65 and older who have difficulty in preparing their own meals or are otherwise in need of home-delivered meals.

2.19 Increase to at least 75 percent the proportion of the Nation's schools that provide nutrition education from preschool through 12th grade, preferably as part of comprehensive school health education.

2.20 Increase to at least 50 percent the proportion of work sites with 50 or more employees that offer nutrition education and/or weight management programs for employees.

2.21 Increase to at least 75 percent the proportion of primary care providers who provide nutrition assessment and counseling and/or referral to qualified nutritionists or dietitians.

1995 Additions

Health Status

2.22 Reduce stroke deaths to no more than 20 per 100,000 people.

2.23 Reduce colorectal cancer deaths to no more than 13.2 per 100,000 people.

2.24 Reduce diabetes to an incidence of no more than 2.5 per 1,000 people and a prevalence of 25 per 1,000 people.

Risk Reduction

2.25 Reduce the prevalence of blood cholesterol levels of 240 mg/dL or greater to no more than 20 percent among adults.

2.26 Increase to at least 50 percent the proportion of people with high blood pressure whose blood pressure is under control.

2.27 Reduce the mean serum cholesterol level among adults to no more than 200 mg/dL.

Appendix C
Summary of Recommendations Listed in *Call to Action*

The following recommendations, made at the national meeting "Call to Action: Better Nutrition for Mothers, Children, and Families," appear in complete form in the proceedings from that meeting (Sharbaugh, 1991). In some cases, the original recommendations were reworded slightly or part of the content was deleted for brevity. All recommendations are for family-centered and culturally and developmentally appropriate care.

Cross-Cutting Recommendations

1 Support nutrition services as an essential component of national health care plans.
2. Enhance financial resources available to support nutrition services for the maternal and child health (MCH) population.
3. Increase the availability and accessibility of comprehensive nutrition services, including nutrition education.
4. Increase the number and improve the quality of personnel providing nutrition services.
5. Educate and train health care providers about sound infant and child feeding practices.

Women's Nutrition

6. Increase attention to preconceptional care, emphasizing preventive approaches.
7. Provide all pregnant and lactating women with access to appropriate nutrition services as basic components of perinatal care.
8. Promote breastfeeding among all women to achieve the *Healthy People 2000* objectives related to breastfeeding.

Infant Nutrition

9. Ensure the availability of infant nutrition services that target parents and other caregivers.
10. Provide information to members of the public to empower them to assume responsibility for their health and that of their families.
11. Promote breastfeeding among all women to achieve the *Healthy People 2000* objectives related to breastfeeding, and establish breastfeeding as the societal norm for infant feeding.
12. Develop a U.S. infant feeding code that positively clarifies the responsibilities of the formula and food industries in promoting breastfeeding and appropriate infant feeding practices.
13. Generate reliable, standardized data on infant feeding practices and service delivery.
14. Specify priorities for research in infant nutrition, and advocate for increased funding.

Child Nutrition

15. Coordinate nutrition services with the health and safety recommendations in the Child Care and Development Block Grant.
16. Provide specialized nutrition and food service management training for nutritionists/dietitians working in schools and child care programs.
17. Ensure quality nutrition education programs for school-age children and adolescents.
18. Strengthen and improve food services for children and adolescents.
19. Promote population-based research related to (1) the natural history of hyperlipidemia, obesity, and hypertension; (2) the promotion of healthy eating patterns for children; and (3) cost-effective and efficient ways to deliver nutrition services to children and their families.

Adolescent Nutrition

20. Improve the nutrition component of health services for adolescents.
21. Ensure quality nutrition education programs for school-age children and adolescents.
22. Strengthen and improve food services for children and adolescents.
23. Improve the nutrition knowledge base and skills of service providers, educators, and parents/caregivers.
24. Expand the research base in adolescent nutrition.

Nutrition for Children With Special Health Needs

25. Expand access to nutrition services in all settings serving children with special health needs and their families.
26. Improve the quality of nutrition services available to children with special health needs.
27. Improve the documentation of need by establishing a nutrition data system for children with special health needs.
28. Improve the basic and continuing education for all personnel involved with children with special health needs.

Appendix D
UNICEF/WHO Ten Steps to Successful Breastfeeding

Every facility providing maternity services and care for newborn infants should:

1. Have a written breastfeeding policy that is routinely communicated to all health care staff.
2. Train all health care staff in skills necessary to implement this policy.
3. Inform all pregnant women about the benefits and management of breastfeeding.
4. Help mothers initiate breastfeeding within a half-hour of birth.
5. Show mothers how to breastfeed and how to maintain lactation even if they should be separated from their infants.
6. Give newborn infants no food or drink other than breast milk, unless *medically* indicated.
7. Practice rooming-in—allow mothers and infants to remain together—24 hours a day.
8. Encourage breastfeeding on demand.
9. Give no artificial teats or pacifiers (also called dummies or soothers) to breastfeeding infants.
10. Foster the establishment of breastfeeding support groups and refer mothers to them on discharge from the hospital or clinic.

Appendix E
List of Strategy Statements

Nutrition Action Themes for the United States, Domestic Section

1. Eating for Health

1.1 Regularly update nutrition standards of established programs.

1.2 Build multisectoral partnerships and commitments.

1.3 Use state-of-the-art methods and technologies.

1.4 Expand proven interventions to fully reach the target groups.

1.5 Improve/expand nutrition education approaches.

1.6 Improve school education and nutrition monitoring of school children.

1.7 Increase the availability of healthful food selections in all types of commercial food service operations.

1.8 Improve policy action through research and evaluation.

2. Nutrition Security for All

2.1 Access to nutrition assistance programs for all eligibles.

2.2 Integrate nutrition into all food assistance programs.

2.3 Measure nutrition security.

2.4 Measure food security.

2.5 Foster community efforts to improve food security.

2.6 Increase access to food.

2.7 Increase food security skills.

2.8 Use modern technology.

2.9 Improve policy and action through research.

3. Safe Food and Water from Source to Table

3.1 Continue to improve pathogen control strategies.

3.2 Expand the development and use of proven effective methods.

3.3 Use state-of-the-art technologies to improve food safety.

3.4 Expand public education about food and water safety.

3.5 Improve policy action through research.

4. Nutrition Monitoring

4.1 Assess the dietary, nutritional, and health status of American Indians and Alaska Natives.

4.2 Standardize measurement methods to improve the comparability and quality of data across the nutrition monitoring program.

4.3 Strengthen the food composition data component of the nutrition monitoring program.

4.4 Expand and enhance State/local nutrition surveillance efforts.

4.5 Strengthen the research base for the nutrition monitoring program.

5. Promoting Breastfeeding

5.1 Build multisectoral partnerships with commitment to building a social culture supportive of breastfeeding.

5.2 Regularly update nutrition components of established programs.

5.3 Use state-of-the-art methods and technologies.

5.4 Expand proven interventions to fully reach the target groups.

5.5 Improve policy action through research.

6. Nutrition-Sensitive Food Production, Economic Policy, and Agricultural Research

6.1 Conduct basic research needed to enhance plant germplasm so as to incorporate higher proportions of nutritious and health-beneficial compounds into plant products at lower production costs and that support efficient, competitive, and sustainable production of safe and wholesome food consistent with accepted animal well-being and environmentally acceptable production practices. Conduct basic research to increase nutrient content and quality of plant products for the benefit of society.

6.2 Conduct research needed to increase animal and fish production through integrated management and health systems that support efficient, competitive, and sustainable production of safe and wholesome food consistent with accepted animal well-being and environmentally acceptable production practices.

6.3 Adopt new technologies to deliver nutrition information to consumers and producers.

6.4 Conduct and support research on the economic analysis of healthy eating, cost/benefit analysis of nutrition policy and programs, and improved economic analysis methods.

6.5 Increase multisectoral investment in training for nutrition-related research, policy development, and intervention.

7. Human Nutrition Research

7.1 Support and expand public and private basic and applied research in the following key areas:

- Basic studies of nutrition and dietary modulation of gene expression and cellular and metabolic processes including:
  - Bionutrition
  - Physiological and neurological development
  - The role of specific dietary factors in health promotion and disease prevention
  - Interaction of nutrients with environmental agents
  - Clinical interventions
  - Safe upper limits of nutrients
  - Nutritionally vulnerable populations
- Energy balance and its implications in obesity, diabetes, and other conditions including:
  - Prevention of obesity and its associated clinical conditions
  - Physical activity and metabolic fitness
  - Eating disorders and undernutrition
- Research on how to stimulate healthy food, nutrition, and physical activity behaviors, both individually and collectively including:
  - Development of better methodology
  - Integrated effective population/community-based interventions

7.2 Increase incentives for talented students to pursue higher education and employment in key areas of basic and applied human nutrition research.